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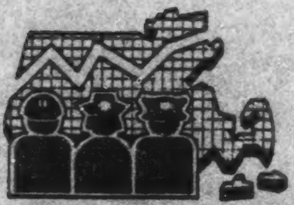
OCCUPATIONAL PROFILE OF SELECTED MANUFACTURING INDUSTRIES IN MASSACHUSETTS 1980



OCCUPATION/INDUSTRY RESEARCH PUBLICATION

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Massachusetts Division of Employment Security
job market research
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AN OCCUPATIONAL PROFILE

OF

SELECTED MANUFACTURING INDUSTRIES

IN

MASSACHUSETTS

1980

Report Number 14

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FOREWORD

The Occupational Employment Statistics Program is part of federal-state cooperative program involving state employment security agencies as well as the Employment and Training Administration and the Bureau of Labor Statistics. It was designed to meet the needs of economists, employment specialists, educators and others for current data on employment by occupations as well as projected data on employment by occupation and industry.

This publication is the fourteenth in a series on current occupational profiles of Massachusetts industries. The information is now being used in constructing an updated industry-occupation matrix and will be used as a data base for projecting future employment needs. While highlights of the industry-occupation matrix are published in a report titled Variety and Distribution of Occupations in Massachusetts (updated every two years) the entire matrix as well as copies of all previous survey publications, is available in our research department for reference.

Our sincere appreciation is extended to the many employers who participated in this survey, without whose support this labor market information would not be available. Acknowledgement for support is also made to the U. S. Department of Labor and in particular to the Bureau of Labor Statistics - both on national and regional levels for their technical support. We also wish to recognize the support of Mary Davie, programmer, Mary Sheehan and her keypunching department and especially Assunta Finocchio who was responsible for control and processing of the survey.

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OCCUPATIONAL PROFILES PUBLICATIONS 220

1/ Rubber and Misc. Plastics (SIC 30), Tobacco (SIC 21) and Petroleum and Coal Products (SIC 29) were not published.

2/ Tables and charts were not published at the 2-digit level. Analysis and tables were prepared for selected 3-digit SIC's only.

INTRODUCTION

Since our previous occupational survey on manufacturing industries in 1977, total manufacturing employment has grown 8.4 percent (621,000 in 1977 to 673,100 in 1980). Durable goods employment, led by nonelectric machinery (SIC 35) and electrical machinery (SIC 36), has grown by 16.3 percent over this period while nondurable goods employment has fallen by 2.0 percent. The following text provides occupational profiles for many manufacturing industries. This survey covered all twenty industry groups (2-digit SIC's) and 139 manufacturing industries (3-digit SIC's). A representative sample contained 3,860 establishments and 571,500 workers; this represented 85 percent of the total manufacturing employment and 40 percent of total manufacturing establishments in this state. This large percentage differential between employment and establishments highlights the fact that our sample is geared more heavily toward the larger manufacturing units. The sample was drawn from the ES-202 report of employment and wages subject to the Massachusetts Employment Security Law. Coverage has now been extended to virtually all private nonagricultural wage and salary employment in this state. The sample was not only chosen by industry but also by size of firm, giving us a more representative sampling of the manufacturing sector on a statewide basis.

There was one major industry group (SIC 30) whose overall response was too low to allow any industries to be published. Three other industry groups (SIC's 28, 34, and 37) were only publishable at a selected 3-digit level. There were also many industries that had fewer than two thousand workers that were not published. Criteria for publication requires a minimum response of 60 percent of the industry employment and employment level of one thousand; this was accomplished in more industries and at a greater level of detail than our previous 1977 survey.

The following text contains the occupational profiles of many of the manufacturing industries. All the publishable industry groups (2-digit SIC's) contain a pie chart of the percentage share of the major occupational categories along with a table listing the ten occupations most prevalent within the industry group.

The survey results show both similarities and differences in their occupational profiles. These profiles are comprised not only of the specific occupational titles (e.g. machinist) but also grouped into broader occupational categories (e.g.maintenance and production worker). It is within this grouping into categories that differences among industries are most prominently highlighted. For example, there is a

INTRODUCTION

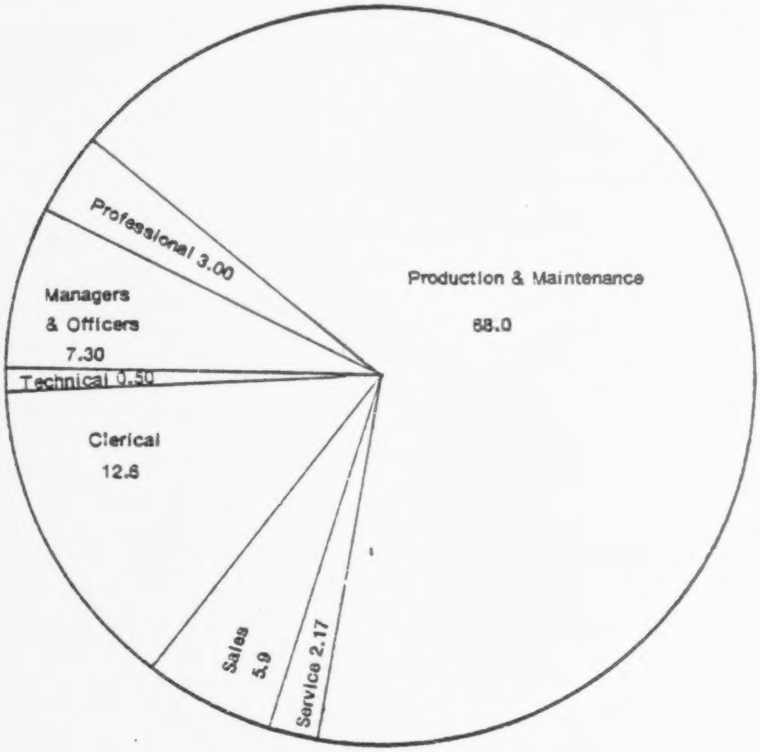
continued

much larger percentage share of maintenance and production workers in apparel (85 percent) or leather (74 percent) than in electrical machinery (50 percent) or nonelectrical machinery (47 percent).

The text contains much information useful to educational and training planners as well as vocation and guidance counselors and others concerned with labor demand. Also of interest are the methodology, occupational definitions and employment trend tables following the text. A list of previous publications of occupational profiles is also included.

FOOD AND KINDRED PRODUCTS (SIC 20)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	Delivery and Route Worker	2,300
2.	Managers and Officers	2,000
3.	All Other Semi-skilled Workers	1,120
4.	Sales Representative	880
5.	Sales Clerk	730
6.	Supervisor, Nonworking	560
7.	Truck Driver	560
8.	All Other Skilled Workers	470
9.	Boner, Meat	440
10.	General Clerk	410

These 10 occupational categories make up 35% of total industry employment.

SIC

20

This major group includes establishments manufacturing or processing foods and beverages for human consumption, and certain related products, such as manufactured ice, chewing gum, vegetable and animal fats and oils, and prepared feeds for animals and fowls.

Total employment in the food and kindred products has declined slightly from 1977 to 1980. This decline is even more evident when compared to the growth occurring in both total nonagricultural wage and salary and manufacturing employment. Three possible reasons for the employment decline in this industry are: the decreased demand for prepared food by the fast food outlets; a reduction in air flight schedules; and the use of automated equipment.

The occupational changes that occurred from the previous 1977 OES survey indicate a decline in every major occupational group except the professional occupations. The 30.2 percent increase in this group is the result of an increase in such occupations as chemists, biological scientists and EDP system analysts. This increase in the higher professional level was offset by a decline at the technical level.

Comparison of Employment SIC 20, OES 1977 - 1980

	1977		1980		Percent Change From
	Number	Percent	Number	Percent	1977 - 1980
Total (All Occupations)[1/]	29,540	100.00	26,930	100.00	- 8.8
Managers and Officers	2,400	8.12	2,000	7.33	-16.7
Professional Occupations	630	2.13	820	3.00	+30.2
Technical Occupations	230	.78	140	.50	-39.1
Service Occupations	1,180	3.99	590	2.17	-50.0
Maintenance & Production Occupations	19,500	66.01	18,330	68.00	- 6.0
Clerical Occupations	3,610	12.22	3,440	12.60	- 4.7
Sales Occupations	1,990	6.74	1,610	5.90	-19.1

[1/] Employment is for the reference months of June 1977 and June 1980.

OCCUPATIONS OF EMPLOYEES
FOOD & KINDRED PRODUCTS (SIC 20)

Reference Date June 1980

OCCUPATION	EMPLOYMENT Number	EMPLOYMENT Percent	EMPLOYMENT Relative Error Percent
Managers and Officers.	2,000	7.33	2
Professional Occupations	820	3.00	N/A
Industrial Engineer.	20	0.06	6
Mechanical Engineer.	50	0.17	6
Chemist.	130	0.47	11
Biological Scientist	40	0.14	10
Systems Analyst, EDP	60	0.22	11
Purchasing Agent/Buyer	100	0.36	4
Accountants/Auditors	310	1.12	12
Nurse, Professional	10	0.03	10
Personnel & Labor Relations Specialists	80	0.30	8
All Other Professional Workers . . .	20	0.06	N/A
Technical Occupations	140	0.50	N/A
Computer Programmer.	70	0.27	8
Drafter	10	0.04	13
All Other Engineering Technicians. .	10	0.04	16
Biological Science Technicians . . .	10	0.04	15
All Other Science Technicians. . . .	30	0.08	N/A
All Other Technicians.	10	0.03	N/A
Service Occupations.	590	2.17	N/A
Janitors, Porters & Cleaners	400	1.47	5
Guards & Doorkeepers	50	0.17	13
Food Service Workers	90	0.31	17
Supervisors, Nonworking - Service. .	40	0.13	10
All Other Service Workers.	10	0.02	N/A
Maintenance & Production Occupations .	18,330	68.00	N/A
Mechanic, Automotive	290	1.04	7
Mechanic, Maintenance.	290	1.04	4
Refrigeration Mechanic/Air Conditioning.	80	0.27	8
Coin/Vending Machine Repairers . . .	70	0.25	7
All Other Mechanics and Repairers. .	170	0.62	N/A
Truck Driver	560	2.06	5
Carpenter.	70	0.24	17
Cook/Cooker.	150	0.54	7
Crane, Derrick/Hoist Operator. . . .	20	0.06	23
Delivery & Route Worker.	2,300	8.47	4

SIC 20 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Instrument Repairer	20	0.05	15
Machinist	160	0.58	8
Maintenance Repairer, General Utility	480	1.76	7
Helper, Trades	90	0.33	9
Mixer	290	1.07	6
Millwright	30	0.11	13
Oiler	30	0.11	12
Order Filler	170	0.60	12
Oven Operator	100	0.36	6
Painter, Maintenance	50	0.17	10
Plumber/Pipefitter	30	0.11	21
Production Packager	3,980	14.61	4
Sheet Metal Worker	10	0.03	14
Stationary Boiler Firer	50	0.17	9
Stationary Engineer	40	0.14	13
Welders and Flamecutters	10	0.05	19
Baker	240	0.86	6
Baker Helper	190	0.68	10
Boner, Meat	440	1.61	19
Butcher, All-Around	230	0.82	15
Candy Maker	60	0.22	15
Casing Finisher	110	0.41	18
Cheesemaker Helper	20	0.06	22
Cooler Room Worker, Meat	10	0.05	15
Dairy Processing Equip. Operator	250	0.92	12
Decorator, Bakery Products	20	0.05	12
Dividing Machine Operator	130	0.46	3
Flavor Room Worker	90	0.33	19
Ingredient Scaler	60	0.22	6
Meat Grinder	30	0.11	14
Miller	60	0.23	26
Novelty Worker	40	0.14	34
Presser/Expeller Operator	40	0.15	23
Pumper	60	0.20	1
Refinery Operator	110	0.40	23
Skin Peeling Machine Operator . .	10	0.03	15
Smoker	40	0.13	11
Spinner, Confection	10	0.04	31
Sugar Boiler	40	0.12	23
Tester	120	0.43	10
Conveyor Operator/Tender	10	0.04	24
Cutting Machine Operator, Food .	80	0.27	15
Fish Cleaner/Butcher	190	0.70	19
Cannery Worker	90	0.32	21
Weigher, Production	120	0.44	26

SIC 20 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Sugar Boiler.	40	0.12	23
Tester.	120	0.43	10
Conveyor Operator/Tender.	10	0.04	24
Cutting Machine Operator, Food. . .	80	0.27	15
Fish Cleaner/Butcher.	190	0.70	19
Cannery Worker.	90	0.32	21
Weigher, Production	120	0.44	26
Food Shaper, Hand	40	0.14	16
Depositor, Food	40	0.14	13
Washer, Separator Food.	20	0.08	20
Equipment Cleaner, Hand	340	1.24	7
All Other Skilled Craft and Kindred Workers	470	1.72	N/A
All Other Semiskilled Craft and Kindred Workers	1,120	4.12	N/A
All Other Laborers.	3,160	11.60	N/A
Clerical Occupations.	3,440	12.60	N/A
Bookkeeping/Billing Machine Operator	20	0.06	12
Computer Operator	80	0.32	4
Keypunch Operator	130	0.47	5
All Other Office Machine Operators.	30	0.12	10
Stenographer.	30	0.10	13
Accounting Clerk.	270	1.00	5
Bookkeeper, Hand.	170	0.60	5
Cashier	60	0.22	13
File Clerk	100	0.35	12
General Office Clerk.	410	1.50	5
Order Clerk	90	0.33	6
Payroll/Timekeeping Clerk	90	0.32	5
Personnel Clerk	50	0.18	10
Procurement Clerk	20	0.08	9
Receptionist.	20	0.06	8
Secretary	320	1.16	6
Statistical Clerk	70	0.24	21
Switchboard Operator.	20	0.08	9
Switchboard Operator/Receptionist .	60	0.20	5
Typist.	80	0.31	9
Clerical Supervisor	150	0.53	6
All Other Office Clerical Workers .	70	0.26	N/A
Production Clerk/Coordinator . . .	110	0.41	10
Shipping Packer	240	0.89	5
Shipping/Receiving Clerk.	350	1.28	6
Weigher, Record Keeper.	20	0.05	16

OCCUPATION	EMPLOYMENT Number	 Percent	 Relative Error Percent
Stock Clerk, Stockroom.	200	0.72	10
All Other Plant Clerical Workers.	180	0.65	N/A
Sales Occupations	1,610	5.90	N/A
Sales Representative.	880	3.23	3
Sales Clerk	730	2.68	5
TOTAL	26,930	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
MEAT PRODUCTS (SIC 201)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	240	7.69	35
Professional Occupations	100	3.21	N/A
Industrial Engineer	10	0.16	N/A
Mechanical Engineer	10	0.39	48
Chemist	20	0.52	50
Biological Scientist	10	0.32	65
Purchasing Agent &/or Buyer . .	10	0.42	30
Accountants and Auditors	20	0.52	21
Personnel & Labor Relations Spec.	10	0.19	39
All Other Professional Workers .	10	0.16	N/A
Technical Occupations	10	0.32	N/A
Computer Programmer	10	0.16	49
Service Occupations	40	1.28	N/A
All Other Service Workers . . .	40	1.40	N/A
Maintenance and Production Occupations	2,330	74.68	N/A
Mechanic, Maintenance	40	1.30	39
Truck Driver	20	0.52	41
Mixer	60	1.92	39
Order Filler	40	1.17	24
Production Packager	340	10.95	38
Butcher, All-Around	230	7.35	49
Cooler Room Worker, Meat	10	0.45	49
Meat Grinder	30	0.88	50
Press Operator, Meat	10	0.19	N/A
Pumper	60	1.79	4
Skin Peeling Machine Operator .	10	0.32	49
Smoker	40	1.17	34
Tester	10	0.16	N/A
All Other Skilled Workers . . .	130	4.28	N/A
All Other Semiskilled Workers . .	740	24.28	N/A
All Other Laborers	560	18.21	N/A
Clerical Occupations	310	9.94	N/A
Computer Operator	10	0.35	36
All Other Office Machine Operators	10	0.29	N/A
Accounting Clerk	50	1.56	51
Switchboard Operator/Reception .	10	0.16	47
All Other Office Clerical Workers	150	4.99	86

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Production Clerk/Coordinator . .	10	0.42	N/A
Shipping Packer	30	0.81	N/A
Shipping/Receiving Clerk	30	0.94	39
Stock Clerk, Stockroom	10	0.22	37
Sales Occupations	90	2.88	N/A
Sales Representatives	80	2.74	32
Sales Clerk	10	0.26	47
TOTAL	3,120	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
CANNED AND PRESERVED FRUITS AND VEGETABLES (SIC 203)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	80	5.06	21
Professional Occupations	20	1.27	N/A
Accountants and Auditors	10	0.61	26
All Other Professional Workers .	10	0.97	N/A
Technical Occupations	-	-	-
Service Occupations	70	4.43	N/A
All Other Service Workers	70	4.43	N/A
Maintenance and Production Occupations	1,190	75.32	N/A
Truck Driver	10	0.54	41
Cook and/or Cooker	50	3.16	25
Electrician	10	0.54	39
Supervisor, Nonworking	40	2.88	41
Maintenance Repairer, General Utility	40	2.74	48
Production Packager	320	22.26	19
Stationary Engineer	10	0.75	47
Tester	20	1.64	29
All Other Skilled Workers	60	4.21	N/A
All Other Semiskilled Workers . .	360	24.55	N/A
All Other Laborers	140	9.79	N/A
Clerical Occupations	180	11.39	N/A
Computer Operator	10	0.41	39
Accounting Clerk	20	1.44	34
General Clerk, Office	20	1.09	37
Secretary	10	0.54	36
Clerical Supervisor	20	1.03	32
All Other Office Clerical Workers	30	2.21	N/A
Production Clerk/Coordinator . .	30	2.06	31
Shipping Packer	20	1.09	37
Shipping/Receiving Clerk	30	2.06	47
Stock Clerk, Stockroom	10	0.34	44
Sales Occupations	40	2.53	N/A
Sales Representatives	30	1.92	48
Sales Clerk	10	0.54	N/A
TOTAL	1,580	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
BAKERY PRODUCTS (SIC 205)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	240	5.19	10
Professional Occupations	40	0.87	N/A
Accountants & Auditors	20	0.46	32
Personnel & Labor Relations Specialists	10	0.10	23
All Other Professional Workers . . .	10	0.17	N/A
Technical Occupations	0	0	N/A
Service Occupations.	110	2.38	N/A
Janitors, Porters & Cleaners	100	2.17	25
Supervisors, Nonworking, Service . .	10	0.27	65
Maintenance & Production Occupations .	3,110	67.32	N/A
Mechanic, Automotive	60	1.29	15
Mechanic, Maintenance	90	1.97	8
All Other Mechanics & Repairers. . .	10	0.14	N/A
Truck Driver	40	0.93	29
Delivery and Route Workers	710	15.00	15
Supervisor, Nonworking	130	2.78	18
Maintenance Repairer, General Utility	40	0.74	27
Helper, Trades	30	0.65	33
Mixer.	80	1.61	20
Order Filler	30	0.70	44
Oven Operator	80	1.72	22
Painter, Maintenance	30	0.53	50
Production Packager.	500	10.70	13
Baker.	240	5.00	19
Baker Helper	190	3.97	30
Decorator, Bakery Products	20	0.31	39
Dividing-Machine Operator	130	2.68	9
Ingredient Scaler	50	1.14	15
Equipment Cleaner, Hand	30	0.61	31
All Other Skilled Craft and Kindred Workers	80	1.72	N/A
All Other Semiskilled Craft and Kindred Workers	50	1.00	N/A
All Other Laborers	490	10.49	N/A

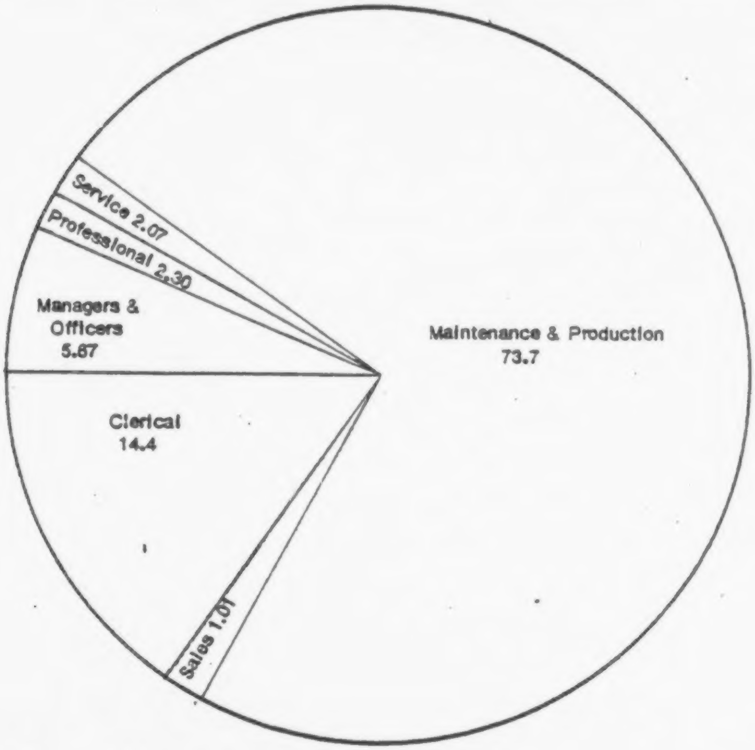
OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Clerical Occupations	450	9.74	N/A
Computer Operator	10	0.17	22
Keypunch Operator	10	0.27	19
All Other Office Machine Operators	20	0.31	N/A
Accounting Clerk	50	1.08	3
Bookkeeper, Hand	10	0.21	33
General Clerk, Office	60	1.23	26
Payroll/Timekeeping Clerk	10	0.23	11
Secretary	30	0.61	26
Switchboard Operator/Receptionist	10	0.14	19
Typist	10	0.10	27
Clerical Supervisor	10	0.23	32
Shipping Packer	110	2.40	24
Shipping/Receiving Clerk	110	2.27	37
All Other Clerical Workers	71	1.51	N/A
Sales Occupations	670	14.50	N/A
Sales Representative	150	3.17	16
Sales Clerk	520	11.10	18
TOTALS	4,620	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

TEXTILE MILL PRODUCTS (SIC 22)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	All Other Laborers and Unskilled Workers	1,990
2.	Managers and Officers	1,500
3.	All Other Semi-skilled Workers	1,110
4.	Knitting Machine Operator	920
5.	Supervisor, Non-working	870
6.	Inspector	750
7.	Sewing Machine Operator Reg. Equip., Garment	640
8.	Production Packager	620
9.	Weaver	600
10.	General Clerk, Office	600

These 10 occupational categories make up 36% of total industry employment.

S I C

22

Employment in textile mills has declined nearly 10 percent between 1977 and 1980 while the number of establishments has dropped by an even larger amount. More than 80 percent of the employment loss, however is accounted for by firms employing 500 or more workers. Employment continues to be concentrated in the Fall River, New Bedford, Worcester and Boston labor market areas. The Fall River LMA alone accounts for nearly twenty percent of textile employment,although it represents only two percent of total statewide employment. Plant relocations and foreign competition combined with present economic conditions, should prevent any immediate turn around in this sector.

An analysis of the occupational structure of the textile industry shows that the maintenance and production category continues to predominate with only a slight decline in the percentage share of total employment since the 1977 survey (75.8 percent to 73.7 percent). While there has been a considerable change in the number of all other semi-skilled workers, it is because these workers have been better distributed to more specific occupations, thus giving us a better occupational profile.

Managers and officers with 5.7 percent of employment and clerical occupations with 14.4 percent,have increased their employment shares since the time of our last survey.

OCCUPATIONS OF EMPLOYEES
TEXTILE MILL PRODUCTS (SIC 22)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	1,500	5.67	5
Professional Occupations	610	2.30	N/A
Industrial Engineer	60	0.20	7
Mechanical Engineer	50	0.18	7
All Other Engineers	10	0.05	N/A
Chemist	50	0.17	8
All Other Natural and Mathematical Scientists	10	0.03	N/A
Systems Analysts, EDP	30	0.12	20
Purchasing Agent/Buyer	70	0.28	8
Accountants and Auditors	150	0.58	6
Personnel and Labor Relations Specialists	50	0.18	4
Designer	110	0.42	15
All Other Professional Workers	20	0.07	N/A
Technical Occupations	320	1.22	N/A
Computer Programmer	60	0.20	12
Engineering Technician	10	0.04	15
Colorist	140	0.52	4
All Other Science Technicians	100	0.36	N/A
All Other Technicians	10	0.04	N/A
Service Occupations	550	2.07	N/A
Janitors, Porters, Cleaners	280	1.07	4
Guards & Doorkeepers	100	0.36	9
Supervisors, Nonworking Service Only	140	0.52	12
All Other Service Workers	30	0.09	N/A
Maintenance and Production Occupations	19,530	73.70	N/A
Mechanic, Maintenance	160	0.62	7
Knitting-Machine Fixer	130	0.50	20
Loom Fixer	320	1.20	8
Section Repairer and Setter	190	0.72	10
Mechanic, Sewing Machine	20	0.05	16
All Other Mechanics and Repairer	20	0.06	N/A
Presser, Hand	10	0.05	23
Presser, Machine	110	0.42	16
Truck Driver	110	0.41	4

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Carpenter	40	0.13	5
Crane, Derrick/Hoist Operators	20	0.05	29
Drawer-In, Hand	60	0.22	7
Electrician	130	0.47	4
Supervisor, Nonworking	870	3.29	3
Rigger	20	0.05	19
Industrial Truck Operator	250	0.94	5
Inspector	750	2.85	4
Machinist	100	0.36	9
Maintenance Repairer, General Utility	420	1.60	3
Helpers, Trace	60	0.22	7
Millwright	90	0.34	9
Oiler	30	0.10	10
Order Filler	180	0.69	9
Painter, Maintenance	20	0.08	14
Plumber/Pipefitter	30	0.12	8
Production Packager	620	2.34	8
Sewing Machine Operator, Regular Equipment, Garment	640	2.42	18
Sewing Machine Operator, Special Equipment, Garment	150	0.57	19
Sewing Machine Operator, Regular Equipment, Nongarment	260	0.96	12
Sewing Machine Operator, Special Equipment, Nongarment	100	0.38	10
Spooler Operator, Automatic	40	0.13	6
Stationary Boiler, Firer	80	0.30	6
Stationary Engineer	20	0.05	17
Welders and Flamecutters	10	0.02	14
Weaver	600	2.29	5
Ager Operator	20	0.08	9
Back Tender, Cloth Printing	130	0.48	14
Battery Loader	60	0.23	11
Beam-Dyer Operators	50	0.18	9
Beam-Warper Tenders	170	0.66	7
Bleach-Range Operators	80	0.30	5
Blending-Machine Operators	100	0.38	6
Bobbin Sorter	20	0.07	6
Bobbin Winders, Machine or Sewing Machine	120	0.44	10
Boil-Off Machine Operator, Cloth	60	0.24	7
Braiding Machine Operator	250	0.96	4
Burler	60	0.20	11
Calender Operator, Cloth Pressing	140	0.54	16
Calendering-Machine Operator, Knit Goods Tubing	30	0.12	13
Card Grinder	30	0.12	12

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Card Tenders	410	1.54	4
Drawing-Frame Tenders	90	0.33	9
Cloth Feeders	350	1.30	8
Finishing-Range Tenders . . .	50	0.20	9
Finishing-Range Operators . .	90	0.32	8
Cloth Printer	70	0.26	10
Cloth-Shrinking Machine Operator	40	0.15	6
Cloth Trimmers, Machine Operator	110	0.41	12
Cloth or Carpet Winder	160	0.61	12
Coating Machine Operator . . .	500	1.90	8
Creeler, Yarn	150	0.55	9
Cutter, Portable Machine . . .	110	0.42	12
Doffer	170	0.64	9
Drawing-In Machine Tenders . .	30	0.09	6
Dresser, Tenders	60	0.22	8
Dye-Range Operators	120	0.45	13
Dye-Reel Operator	380	1.45	11
Dye-Tank Tender	40	0.14	35
Dye-Tub Operator	30	0.12	8
Hand Sewer	20	0.05	35
Harness Builders, Loom Changes/ Starters	130	0.49	10
Harness Placer	30	0.12	11
Knitter, Full-Fashioned Garment	10	0.03	47
Knitting-Machine Operators . .	920	3.50	15
Laminating-Machine Operator/ Spreader Machine	30	0.09	13
Mender, Cloth	220	0.83	6
Mercerizer Operators/Mangle Tenders	90	0.32	12
Napper Tender	80	0.29	12
Needle-Felt-Making Operator/ Needle Loom Operator	140	0.52	12
Open/Waste Machine Tender . .	40	0.16	14
Picker Tender	70	0.26	9
Quilling Machine Operator . .	10	0.03	14
Rope Laying Machine Operator .	80	0.31	17
Rubber-Covering Machine Operator	20	0.08	18
Skein-Yarn Dyer	10	0.04	6
Slasher Tender	40	0.15	18
Slubber Tender	20	0.08	18
Smash Hand	40	0.13	14
Speeder Tender	10	0.03	13
Spinner, Frame	470	1.79	3
Tenter-Frame Operator	350	1.32	8
Tester	120	0.44	6
Twister Tender	240	0.91	5
Warp-Tying Machine Tender . .	140	0.53	4

OCCUPATION	EMPLOYMENT Number	Percent	Relative Error Percent
Washer, Synthetic Fibers	10	0.04	21
Winder Operator, Automatic . . .	300	1.13	5
Texturizer/Crimp Setter	80	0.31	27
Yarn Winder	370	1.41	9
Cloth Grader	100	0.37	23
Folder, Hand	140	0.54	25
Folding Machine Operator	30	0.12	13
Cutter, Machine	210	0.79	9
Drier, Operator, Textile & Rugs .	180	0.69	11
Screen/Stencil Printer/Setter . .	100	0.38	9
Mixer/Blender Chemicals Products.	240	0.92	6
All Other Skilled Craft and Kindred Workers	400	1.47	N/A
All Other Semiskilled Craft and Kindred Workers	1,110	4.20	N/A
All Other Laborers	1,990	7.55	N/A
Clerical Occupations	3,830	14.40	N/A
Bookkeeping/Billing Machine Operators	40	0.15	9
Computer Operator	90	0.34	11
Keypunch Operators	130	0.50	24
All Other Office Machine Operators	30	0.11	22
Stenographer	20	0.06	13
Accounting Clerk	280	1.04	16
Bookkeeper, Hand	30	0.10	11
File Clerk	30	0.11	13
General Clerk, Office	600	2.27	5
Order Clerk	140	0.54	22
Payroll/Timekeeping Clerk . . .	90	0.34	3
Personnel Clerk	30	0.12	11
Procurement Clerk	40	0.14	20
Receptionist	10	0.04	15
Secretary	260	0.97	5
Statistical Clerk	30	0.09	23
Switchboard Operator	20	0.07	10
Switchboard Operator/Receptionist	40	0.15	7
Typist	100	0.39	12
Clerical Supervisor	200	0.75	12
All Other Office Clerical Workers	60	0.22	N/A
Production Clerk/Coordinator . .	190	0.71	8
Shipping Packer	530	2.01	6
Shipping/Receiving Clerk	330	1.24	5
Weigher/Record Keeping	20	0.07	29
Stock Clerk, Stockroom	150	0.58	7
All Other Plant Clerical Workers.	70	0.24	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Sales Occupations	270	1.01	N/A
Sales Representative	220	0.84	13
Sales Clerk	50	0.19	19
TOTAL	26,610	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
NARROW FABRIC MILLS (SIC 224)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	40	3.15	15
Professional Occupations	20	1.57	N/A
Purchasing Agent/Buyer	10	0.39	19
All Other Professional Workers .	10	1.10	N/A
Technical Occupations	-	-	-
Service Occupations	20	1.57	N/A
Janitors, Porters, & Cleaners .	10	0.62	20
All Other Service Workers . . .	10	0.78	N/A
Maintenance and Production Occupations	1,050	82.68	N/A
Mechanic, Maintenance	40	2.89	23
Loom Fixer	10	0.39	18
Drawer-In, Hand	10	0.39	N/A
Supervisor, Nonworking	50	4.14	24
Inspector	30	2.66	18
Machinist	10	0.93	42
Maintenance Repairer, General Utility	20	1.33	43
Order Filler	10	0.39	45
Production Packager	10	1.01	45
Weaver	150	12.05	19
Beam-Warpers Tenders	10	0.93	30
Bobbin Winders, Machine	30	1.95	46
Braiding Machine Operator . . .	150	11.89	16
Calendering-Machine Operator Knit Goods Tubing	10	1.09	41
Knitting-Machine Operator . . .	10	0.93	25
Warp-Tying Machine Tender . . .	20	1.33	46
Winder Operator, Automatic . . .	80	6.33	35
All Other Skilled Workers . . .	20	1.33	N/A
All Other Semiskilled Workers .	100	8.14	N/A
All Other Laborers and Unskilled Workers	280	21.93	N/A
Clerical Occupations	120	9.45	N/A
General Clerk, Office	20	1.64	24
Payroll/Timekeeping Clerk . . .	10	0.46	24
Secretary	10	0.93	13
All Other Office Clerical Workers	30	2.42	N/A
Production Clerk/Coordinator . .	10	0.62	N/A

SIC 224 (con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Shipping Packer	10	0.39	N/A
Shipping/Receiving Clerk . . .	20	1.33	7
Stock Clerk, Stockroom	20	1.40	18
Sales Occupations	20	1.57	N/A
Sales Representatives	10	0.70	14
Sales Clerk	10	1.01	N/A
TOTAL	1,270	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
YARN AND THREAD MILLS (SIC 228)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	90	4.81	16
Professional Occupations	20	1.05	N/A
Accountants/Auditors	10	0.67	34
All Other Professional Workers . .	10	0.52	N/A
Technical Occupations	**	-	-
All Other Technicians	**	-	-
Service Occupations.	20	1.05	N/A
Janitors, Porters & Cleaners . . .	20	1.05	17
Maintenance & Production Occupations	1,630	85.34	N/A
Mechanic, Maintenance	10	0.51	45
Loom Fixer	20	1.13	45
Section Repairer & Setter.	40	2.12	21
Drawer-In, Hand.	10	0.41	48
Supervisor, Nonworking	60	3.20	22
Inspector.	60	3.31	27
Maintenance Repairer, General Utility	60	3.20	20
Millwright	10	0.31	42
Production Packager.	30	1.55	20
Weaver	30	1.39	44
Beam-Dyer Operator..	10	0.51	22
Burler	20	0.98	42
Card Tenders	130	6.67	21
Doffer	20	0.77	47
Dresser, Tender.	30	1.50	44
Spinner, Frame	230	11.95	14
Tester	10	0.46	46
Twister Tender.	140	7.24	22
Winder Operator, Automatic	80	3.98	25
Yarn Winder.	170	8.90	19
All Other Skilled Craft and Kindred Workers	20	1.04	N/A
All Other Semiskilled Craft and Kindred Workers	250	12.94	N/A
Clerical Occupations	130	6.81	N/A
General Clerk, Office.	20	1.03	22
Secretary.	20	0.82	17
Production Clerk/Coordinator . . .	10	0.46	24

SIC 228 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Shipping Packer	30	1.60	37
Shipping/Receiving Clerk	20	0.98	27
Stock Clerk, Stockroom	10	0.46	32
Sales Occupations	20	1.05	N/A
Sales Representative	20	1.05	29
TOTAL	1,910	100.00	N/A

** Less than 10

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
MISC. TEXTILE GOODS (SIC 229)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	440	7.91	9
Professional Occupations	220	3.96	N/A
Industrial Engineer	20	0.36	35
Mechanical Engineer	30	0.57	29
All Other Natural and Mathematical Scientists	40	0.10	N/A
Systems Analyst, EDP	10	0.10	22
Purchasing Agent/Buyer	20	0.39	20
Accountants/Auditors	60	1.13	21
Personnel and Labor Relations Specialists	20	0.32	6
All Other Professional Workers	20	0.36	N/A
Technical Occupations	110	1.98	N/A
Computer Programmer	20	0.36	28
Colorist	30	0.54	26
All Other Science Technicians	60	1.08	N/A
Service Occupations	120	2.16	N/A
Janitors, Porters & Cleaners	80	1.38	28
Guards & Doorkeepers	30	0.48	31
Supervisors, Nonworking, Service	10	0.23	32
Maintenance & Production Occupations	3,680	66.19	N/A
All Other Mechanics & Repairers	120	2.16	N/A
Truck Driver	50	0.90	26
Carpenter	10	0.18	24
Electrician	40	0.72	17
Supervisor, Nonworking	180	3.24	16
Industrial Truck Operator	40	0.66	23
Inspector	80	1.38	30
Machinist	30	0.61	12
Maintenance Repairer, General Utility	120	2.19	17
Order Filler	70	1.29	24
Plumber/Pipefitter	10	0.14	32
Spooler Operator, Automatic	10	0.23	30
Stationary Boiler Firer	20	0.36	30

SIC 229 (cont.)

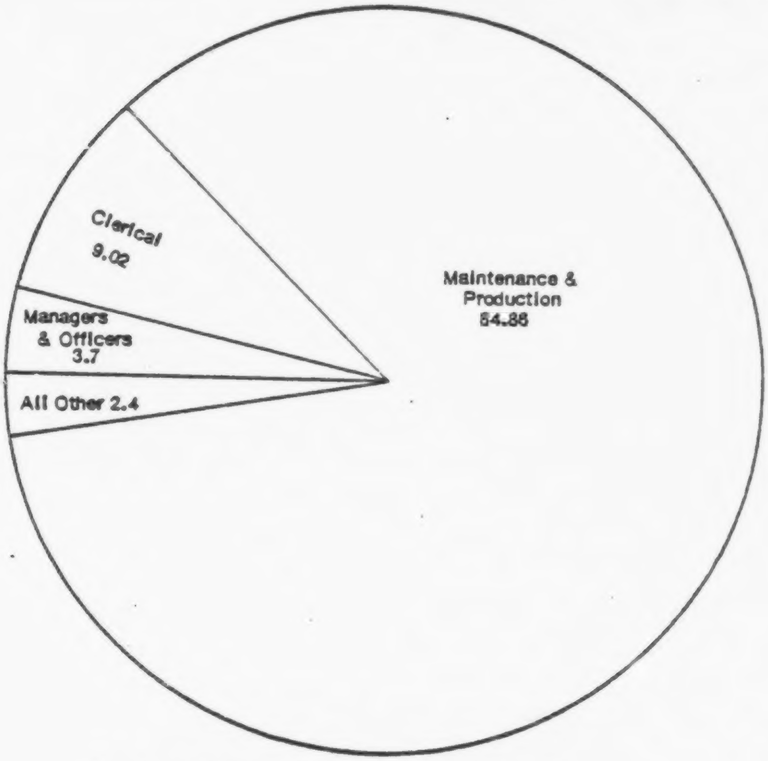
OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Beam-Dyer Operator	10	0.12	28
Blending-Machine Operator	60	1.06	16
Bobbin Winders, Machine	20	0.34	19
Braiding Machine Operator	90	1.62	20
Card Tenders	130	2.28	11
Coating Machine Operator	320	5.67	34
Doffer	10	0.10	32
Tester	30	0.59	16
Twister Tender	50	0.81	18
Yarn Winder	10	0.23	33
Screen/Stencil Printer/Setter	20	0.39	31
Mixer/Blender, Chemicals Products	80	1.38	31
All Other Skilled Craft and Kindred Workers	200	3.64	N/A
All Other Semiskilled Craft and Kindred Workers	1,080	19.44	N/A
All Other Laborers	790	14.24	N/A
Clerical Occupations	900	16.19	N/A
Computer Operator	20	0.43	26
Accounting Clerk	70	1.20	16
File Clerk	10	0.10	22
General Clerk, Office	180	3.26	18
Payroll/Timekeeping Clerk	10	0.25	17
Personnel Clerk	10	0.16	5
Procurement Clerk	10	0.10	24
Secretary	120	2.17	17
Switchboard Operator	10	0.09	28
Switchboard Operator/Receptionist	10	0.16	17
Clerical Supervisor	40	0.68	34
All Other Office Clerical	70	1.19	N/A
Production Clerk/Coordinator	40	0.79	35
Shipping Packer	110	1.98	18
Shipping/Receiving Clerk	70	1.31	22
Stock Clerk, Stockroom	30	0.45	12
All Other Plant Clerical	3	0.05	N/A
Sales Occupations	90	1.62	N/A
Sales Representative	90	1.60	17
TOTAL	5,560	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

APPAREL AND OTHER FINISHED PRODUCTS MADE FROM FABRICS AND SIMILAR MATERIALS (SIC 23)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	Sewing Machine Operator, Reg. Equip., Garment	14,420
2.	Sewing Machine Operator, Spec. Equip., Garment	3,910
3.	Sewing Machine Operator, Reg. Equip., Nongarment	1,680
4.	Managers and Officers	1,500
5.	Presser, Machine	1,260
6.	Thread Trimmer	800
7.	Inspector	790
8.	Presser, Hand	780
9.	Shipping Packer	640
10.	Sewing Machine Operator, Spec. Equip., Nongarment	630

These 10 occupational categories make up 65% of total industry employment.

SIC

23

This major group, known as the cutting-up and needle trades, includes establishments producing clothing and fabricating products by cutting and sewing purchased woven or knit textile fabrics and related materials such as leather, rubberized fabrics, plastics and furs.

Employment in the apparel industry has been on a downward trend. In 1970, the Massachusetts apparel industry had nearly 50,000 jobs, but with a change in the state's industrial mix, this number shrank to 40,000 in 1980 (-25 percent). Approximately 3,000 jobs were lost during the 1977-1980 time period. Unfortunately foreign competition, automation, and the cost of labor have been some of the contributing factors for this industry's employment decline.

The occupations within the apparel industry are largely concentrated within the maintenance and production occupations (85 percent of all occupations). This high level of maintenance and production workers exists throughout all of the defined apparel industries. Over 50 percent of the maintenance and production workers are sewing machine operators.

In contrast to the large percentages of professional/technical workers in the state's growing industries, these occupations make up less than one percent of the apparel industrys' employment level.

PERCENT OF OCCUPATIONAL DISTRIBUTION
1980 OES SURVEY

	23	232	233	234	238	239
Total	100.0	100.0	100.0	100.0	100.0	100.0
Manager and Officers	3.71	4.28	3.05	3.07	4.64	6.03
Professional Occupations	0.72	0.23	0.51	0.68	1.07	1.30
Technical Occupations	0.12	0.23	0.11	-	0.36	0.14
Service Occupations	0.64	0.45	0.51	-	0.36	1.00
Maintenance and Production Occ.	84.87	85.36	88.64	82.59	77.5	76.47
Clerical Occupations	9.02	7.88	6.61	13.31	13.95	13.77
Sales Occupations	0.92	1.58	0.57	0.34	2.14	1.29

OCCUPATIONS OF EMPLOYEES
APPAREL AND OTHER FINISHED PRODUCTS (SIC 23)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	1,500	3.71	3
Professional Occupations	290	0.72	N/A
Industrial Engineer.	30	0.07	7
Systems Analyst, EDP	20	0.04	7
Purchasing Agent/Buyer	40	0.10	10
Personnel & Labor Relations Specialists	20	0.04	15
Designer	100	0.23	8
All Other Professional Workers . .	80	0.20	N/A
Technical Occupations.	50	0.12	N/A
Computer Programmer.	30	0.07	11
Engineering Technician	10	0.01	25
All Other Technicians	10	0.01	N/A
Service Occupations	260	0.64	N/A
Janitors, Porters & Cleaners . . .	190	0.46	5
Guards & Doorkeepers	20	0.04	7
Supervisor, Nonworking Service . .	40	0.10	17
All Other Service Workers.	10	0.02	N/A
Maintenance & Production Occupation	34,250	84.86	N/A
Mechanic, Maintenance	20	0.05	8
Mechanic, Sewing Machine	190	0.48	4
All Other Mechanics & Repairers. .	10	0.02	N/A
Presser, Hand.	780	1.94	5
Presser, Machine	1,260	3.11	3
Truck Driver	40	0.09	9
Carpenter.	20	0.04	8
Electrician	10	0.01	5
Supervisor, Nonworking	590	1.46	4
Industrial Truck Operator.	20	0.03	10
Inspector.	790	1.95	4
Machinist.	10	0.01	9
Maintenance Repairer, General Utility	60	0.15	8
Helper Trade	50	0.11	17
Order Filler	320	0.78	11
Production Packager	440	1.07	14
Sewing Machine Operator, Regular Equipment - Garment	14,420	35.77	2
Sewing Machine Operator Special Automatic Equipment	3,910	9.70	4

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Sewing Machine Operator Regular Equipment Nongarment	1,680	4.15	10
Sewing Machine Operator, Special Automatic Equipment Nongarment	630	1.55	11
Bundler	410	1.01	4
Cap Maker	130	0.31	8
Cloth Printer	20	0.04	N/A
Cutter, Portable Macuine	400	0.98	5
Die Cutter	50	0.15	7
Draper	20	0.05	20
Fusing Machine Operator	310	0.76	6
Garment Repairer	70	0.18	10
Hand Blockers, Hats	10	0.01	23
Hand Sewer	320	0.78	12
Belt Maker, Apparel	60	0.15	8
Milliner	10	0.02	22
Pattern Cutter	40	0.09	13
Patternmaker	60	0.15	15
Pleating Machine Operator	50	0.12	19
Sample Maker	180	0.44	5
Shaper and Presser	220	0.55	8
Slitting Machine Operator	30	0.07	21
Spot Cleaner	100	0.24	14
Spreader	360	0.89	5
Tester	20	0.05	19
Thread Trimmer	800	1.98	4
Work Distributor	490	1.20	7
Marker	110	0.27	7
Cutter, Hand	480	1.18	6
Turner	400	0.99	6
Folder, Hand	480	1.19	7
Folding Machine Operator	130	0.32	29
Soabar Operator	150	0.37	7
Cutter, Machine	190	0.47	6
Screen/Stencil Setter	60	0.14	30
All Other Skilled Craft and Kindred Workers	170	0.42	N/A
All Other Semiskilled Craft and Kindred Workers	500	1.24	N/A
All Other Laborers	2,160	5.35	N/A
Clerical Occupations	3,640	9.02	N/A
Bookkeeping/Billing Machine Operator	30	0.07	21
Computer Operator	50	0.12	12
Keypunch Operator	80	0.19	4

SIC 23 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
All Other Office Machine Operators.	10	0.01	13
Stenographer.	10	0.01	28
Accountinc Clerk.	150	0.37	6
Bookkpeeper, Hand	280	0.68	7
File Clerk.	40	0.10	11
General Office Clerk.	530	1.31	4
Order Clerk	110	0.27	6
Payroll/Timekeeping Clerk	280	0.69	4
Personnel Clerk	20	0.05	12
Procurement Clerk	20	0.04	19
Receptionist.	20	0.03	24
Secretary	170	0.41	8
Statistical Clerk	20	0.03	11
Switchboard Operator.	10	0.02	11
Switchboard Operator/Receptionist	40	0.09	10
Typist.	60	0.14	9
Clerical Supervisor	140	0.34	7
All Other Office Clerical Workers	100	0.23	N/A
Production Clerk/Coordinator. . .	120	0.30	6
Shipping Packer	640	1.59	4
Shipping/Receiving Clerk.	340	0.83	4
Stock Clerk, Stockroom.	170	0.40	7
Shade-Ticket Marker	140	0.34	10
All Other Plant Clerical Workers.	60	0.15	N/A
Sales Occupations	370	0.92	N/A
Sales Representative.	320	0.80	8
Sales Clerk	50	0.11	8
TOTAL	40,360	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
MEN'S AND BOYS FURNISHINGS (SIC 232)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	190	4.28	N/A
Professional Occupations	10	0.23	N/A
All Other Professionals	10	0.02	N/A
Technical Occupations	10	0.23	N/A
All Other Technicians.	10	0.22	N/A
Service Occupations	10	0.31	40
Guards and Doorkeepers	10	0.15	0
Maintenance and Production Occupations	3,790	85.36	N/A
Mechanic, Maintenance	10	0.22	0
Presser, Machine	320	7.10	11
Supervisor, Nonworking	30	0.62	33
Inspector	130	2.79	21
Sewing Machine Operator, Regular Equipment Garment	1,510	33.59	15
Sewing Machine Operator, Special Equipment Garment	960	21.20	7
Bundler	40	0.84	24
Spot Cleaner	30	0.55	20
Spreader	30	0.64	30
Thread Trimmer	70	1.50	34
Work Distributor	60	1.39	32
Turner	70	1.50	31
Soabar Operator	30	0.59	26
All Other Skilled Workers	30	0.07	N/A
All Other Semiskilled Workers . .	320	7.10	N/A
All Other Laborers	150	3.24	N/A
Clerical Occupations	350	7.88	N/A
General Clerk, Office	80	1.73	23
Payroll/Timekeeping Clerk	40	0.95	33
All Other Office Clerical Workers	90	2.00	N/A
Production Clerk/Coordinator . .	20	0.42	20
Shipping Packer	70	1.53	16
Shipping/Receiving Clerk	30	0.64	34
All Other Plant Clerical Workers .	17	0.40	N/A

SIC 232 (con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Sales Occupations	70	1.58	N/A
Sales Representatives	70	1.59	40
TOTAL	4,440	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
WOMAN'S AND MISSES' OUTERWEAR (SIC 233)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	540	3.05	17
Professional Occupations..	100	0.56	N/A
Industrial Engineer	10	0.05	34
Systems Analyst, EDP	10	0.03	24
All Other Professional Workers . .	80	0.42	N/A
Technical Occupations	20	0.11	N/A
All Other Technicians	20	0.11	N/A
Service Occupations	90	0.51	N/A
Janitors, Porters & Cleaners . . .	60	0.32	33
All Other Service Workers.	30	0.19	N/A
Maintenance & Production Occupations	15,690	88.54	N/A
All Other Mechanics & Repairers. .	60	0.01	N/A
Presser, Hand	550	3.08	19
Presser, Machine	600	3.36	17
Supervisor, Nonworking	170	0.96	33
Inspector	270	1.50	33
Sewing Machine Operator, Regular Equipment - Garment.	8,620	48.71	8
Sewing Machine Operator, Special Equipment - Garment.	1,500	8.47	23
Bundler.	220	1.25	21
Cutter, Portable Machine	150	0.83	29
Fusing Machine Operator.	210	1.20	26
Sample Maker	110	0.63	22
Spreader	150	0.86	31
Thread Trimmer	450	2.55	18
Marker	60	0.31	33
Cutter, Hand	70	0.37	32
Turner	180	1.02	32
All Other Semiskilled Craft and Kindred Workers.	920	5.17	N/A
All Other Laborers	1,280	7.21	N/A
Clerical Occupations	1,170	6.60	N/A
Keypunch Operator.	30	0.15	17
All Other Office Machine Operators	40	0.21	N/A

SIC 233 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
General Clerk, Office.	200	1.12	26
Payroll/Timekeeping Clerk.	120	0.65	29
Clerical Supervisor.	60	0.31	31
All Other Office Clerical.	270	1.53	N/A
Production Clerk/Coordinator	40	0.24	35
Shipping/Receiving Clerk	110	0.63	27
All Other Plant Clerical	310	1.74	N/A
Sales Occupations	110	0.62	N/A
TOTALS	17,720	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
WOMAN'S AND MISSES' UNDERGARMENTS (SIC 234)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	90	3.07	22
Professional Occupations	20	0.68	N/A
All Other Professional Workers .	20	0.68	N/A
Technical Occupations	**	-	-
Service Occupations	20	0.68	18
Janitors, Porters, & Cleaners . .	20	0.68	18
Maintenance and Production Occupations	2,420	82.59	N/A
Mechanic, Sewing Machine	30	0.84	22
All Other Mechanica & Repairers .	10	0.20	N/A
Presser, Machine	30	0.84	22
Supervisor, Nonworking	50	1.59	19
Inspector	190	0.37	16
Production Packager	30	0.94	11
Sewing Machine Operator, Regular Equipment-Garment	1,130	38.16	8
Sewing Machine Operator, Special Equipment-Garment	70	2.47	30
Bundler	30	0.98	17
Cutter, Portable Machine	10	0.47	34
Spreader	40	1.28	16
Thread Trimmer	40	1.38	27
Work Distribtor	30	1.08	29
Marker	10	0.37	26
Cutter, Hand	10	0.44	33
Folder, Hand	50	1.66	33
Cutter, Machine	40	1.42	22
All Other Skilled Workers	**	-	-
All Other Semiskilled Workers . .	360	12.24	N/A
All Other Laborers	260	8.77	N/A
Clerical Occupations	390	13.31	N/A
Computer Operator	10	0.23	48
Accounting Clerk	10	0.40	31
Bookkeeper, Hand	20	0.50	31
General Clerk, Office	30	0.94	30
Payroll/Timekeeping Clerk	20	0.74	16
Procurement Clerk	10	0.16	32
Secretary	10	0.16	36

SIC 234 (con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Clerical Supervisor	20	0.67	23
All Other Office Clerical Workers	80	2.86	N/A
Shipping Packer	110	3.66	11
Shipping/Receiving Clerk	40	1.42	26
Stock Clerk, Stockroom	20	0.50	31
All Other Plant Clerks	10	0.16	N/A
Sales Occupations	10	0.34	N/A
Sales Representatives	10	0.23	44
TOTAL	2,930	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding

** Less than 10

OCCUPATIONS OF EMPLOYEES
MISC. APPAREL AND ACCESSORIES (SIC 238)

Reference Date May 1980

OCCUPATION	EMPLOYMENT Number	EMPLOYMENT Percent	EMPLOYMENT Relative Error Percent
Managers and Officers	130	4.64	10
Professional Occupations	30	1.08	N/A
All Other Professional Workers	30	1.08	N/A
Technical Occupations	10	0.36	N/A
All Other Technicians	10	0.36	N/A
Service Occupations	10	0.36	N/A
Janitors, Porters, & Cleaners	10	0.36	17
Maintenance and Production Occupations	2,170	77.50	N/A
Mechanic, Sewing Machine	10	0.46	15
Presser, Hand	20	0.86	18
Presser, Machine	70	2.33	15
Truck Driver	10	0.25	22
Supervisor, Nonworking	90	3.26	12
Inspector	30	1.18	26
Maintenance Repairer, General Utility	10	0.35	33
Order Filler	20	0.82	27
Production Packager	30	1.11	4
Sewing Machine Operator, Regular Equipment Garment	930	33.23	7
Sewing Machine Operator, Special Equipment Garment	100	3.73	11
Bundler	10	0.50	17
Cloth Printer	20	0.64	N/A
Cutter, Portable Machine	40	1.47	15
Die Cutter	20	0.78	19
Fusing Machine Operator	30	0.96	24
Belt Maker, Apparel	60	2.26	25
Pleating Machine Operator	30	1.14	48
Sample Maker	10	0.35	22
Shaper and Presser	10	0.50	24
Spreader	20	0.78	18
Thread Trimmer	70	2.33	12
Work Distribution	20	0.82	21
Marker	10	0.21	23
Cutter, Hand	40	1.54	18
Turner	30	0.89	14
Folding Machine Operator	10	0.17	38
Soabar Operator	10	0.43	18

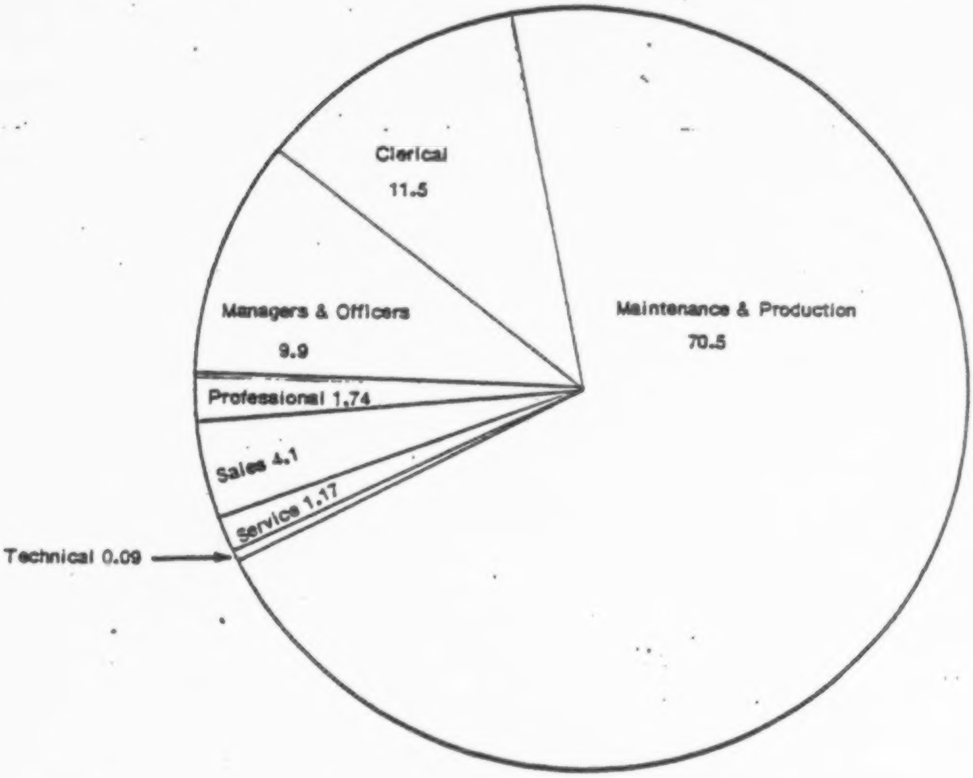
OCCUPATION	EMPLOYMENT Number	Percent	Relative Error Percent
Cutter Machine	40	1.29	33
All Other Skilled Workers . . .	10	0.36	N/A
All Other Semiskilled Workers . .	110	4.02	N/A
All Other Laborers	250	9.02	N/A
Clerical Occupations	390	13.93	N/A
Accounting Clerk	30	0.93	20
Bookkeeper, Hand	20	0.82	17
File Clerk	10	0.17	N/A
General Clerk, Office	60	1.97	9
Payroll/Timekeeping Clerk . . .	20	0.82	9
Clerical Supervisor	10	0.17	23
All Other Office Clerical Workers	70	2.48	26
Production Clerk/Coordinator . .	20	0.57	15
Shipping Packer	70	2.40	10
Shipping/Receiving Clerk	30	1.11	7
Stock Clerk, Stockroom	30	0.96	12
Shade-Ticket Marker	20	0.53	21
Sales Occupations	60	2.14	N/A
Sales Representatives	50	1.93	7
Sales Clerk	10	0.25	32
TOTAL	2,800	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

LUMBER AND WOOD PRODUCTS, EXCEPT FURNITURE (SIC 24)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	Assembler	760	6.	Truck Driver	180
2.	Managers and Officers	510	7.	General Clerk, Office	170
3.	Cabinetmaker	470	8.	Wood Machinist	140
4.	Woodworking Machine Operator	230	9.	All Other Skilled Workers	130
5.	Sales Representative	215	10.	Carpenter	130

These 10 occupational categories make up 58% of total industry employment.

S I C

24

This major group includes logging camps, planing mills, plywood mills, and establishments engaged in manufacturing finished articles made entirely or mainly of wood or wood substitutes (excluding furniture). Employment levels in this industry showed some growth between 1977 and 1979 but dropped back to the 1977 level of 5200. More than 70 percent of employment in this industry is in millwork (sic 243) and misc. wood products, (sic 249).

The maintenance and production occupations account for more than 70 percent of employment, with six occupations dominating: assembler (760), cabinetmaker (470), woodworking machine operator (230), truck driver (180), wood machinist (140), and carpenter (130). The occupation of manager (510), sales representative (220) and general office clerk (170), when added to the above mentioned maintenance and production occupations, account for over 50 percent of total employment.

A perusal of the occupations in the production category shows a profile of many highly skilled trades, many of which are apprenticable.

Professional and technical occupations combined, represent less than two percent of total employment.

OCCUPATIONS OF EMPLOYEES
LUMBER AND WOOD PRODUCTS (SIC 24)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	510	9.90	1
Professional Occupations	90	1.74	N/A
Industrial Engineer	10	0.11	9
All Other Engineers	10	0.23	N/A
Purchasing Agent/Buyer	10	0.19	9
Accountants/Auditors	50	0.90	4
All Other Professional Workers	10	0.18	N/A
Technical Occupations	50	0.90	N/A
Computer Programer	10	0.19	14
Drafter	40	0.78	5
Service Occupations	60	1.17	N/A
Janitors, Porters & Cleaners	50	1.04	5
Guards & Doorkeepers	10	0.19	15
Maintenance & Production Occupation	3,610	70.50	N/A
Mechanic, Maintenance	10	0.23	9
Truck Driver	180	3.46	4
Cabinet Maker	470	9.28	7
Carpenter	130	2.47	7
Delivery & Route Worker	10	0.11	15
Supervisor, Nonworking	100	1.90	4
Glazier	10	0.19	23
Industrial Truck Operator	60	1.19	4
Inspector	20	0.31	15
Maintenance Repairer	50	0.96	4
Helper, Trades	110	2.12	6
Production Packager	30	0.58	12
Logging Tractor Operator	30	0.55	9
Power-Barker Operator	30	0.49	6
Band-Scroll Operator	20	0.33	17
Chain Offbearer, Lumber	30	0.66	7
Chipper	10	0.19	12
Cut-Off-Saw Operator, Lumber	90	1.73	5
Edger, Automatic/Pony	30	0.51	7
Faller and/or Bucker	50	1.00	11
Head Sawyer	50	0.92	4
Loader, Car and Truck	20	0.33	10

SIC 24 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Log Handling Equipment Operator	30	0.64	8
Log Inspectors, Graders	20	0.39	11
Lumber Graders	20	0.35	10
Lumber Straightener	20	0.31	8
Machine Setter, Woodworking	60	1.08	10
Wood Machinist	140	2.77	6
Nailing-Machine Operator	70	1.35	5
Off-Bearer	30	0.49	10
Resawyer	20	0.39	7
Ripsaw Operator	70	1.31	6
Rubber	20	0.47	19
Sander, Wood	110	2.12	9
Saw Filer	10	0.17	12
Shaper/Router Operator	20	0.39	20
Trim Saw Operator	40	0.84	5
Variety Saw Operator	40	0.70	8
Woodworking-Machine Operator	230	4.46	10
Painter, Production	80	1.51	9
Planer, Operator	20	0.43	7
Gluer/Cementer, Hand	10	0.11	19
Assembler	760	15.00	6
All Other Skilled Workers	110	2.50	N/A
All Other Semiskilled Workers	60	1.18	N/A
All Other Laborers	90	1.74	N/A
Clerical Occupations	590	11.50	N/A
Computer Operator	10	0.17	16
Kyepunch Operator	10	0.21	12
Accounting Clerk	50	1.02	4
Bookkeeper, Hand	80	1.49	3
File Clerk	30	0.60	15
General Clerk Office	170	3.40	4
Order Clerk	10	0.27	17
Procurement Clerk	10	0.11	16
Secretary	80	1.63	4
Switchboard Operator/Receptionist	10	0.11	16
Typist	10	0.21	17
Clerical Supervisor	20	0.29	14
All Other Office Clerical Workers	10	0.02	N/A
Production Clerk/Coordinator	10	0.21	13
Shipping Packer	70	1.39	5
Shipping/Receiveing Clerk	10	0.21	10

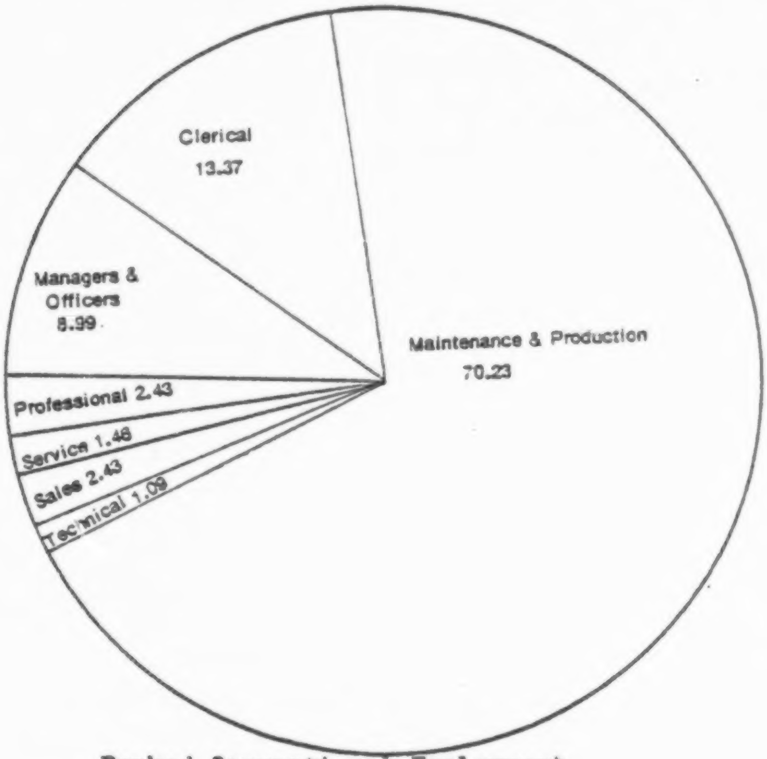
OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Sales Occupations.	215	4.10	N/A
Sales Representative	215	4.10	6
TOTAL	5,125	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

FURNITURE AND FIXTURES (SIC 25)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	Assembler	780
2.	Managers and Officers	740
3.	All Other Laborers and Unskilled Workers	460
4.	Cabinetmaker	370
5.	Sander, Wood	330
6.	Supervisor, Nonworking	320
7.	All Other Semiskilled Workers	290
8.	Sewing Machine Operator, Reg. Equip., Nongarment	240
9.	Woodworking Machine Operator	230
10.	Painter, Production	210

These 10 occupational categories make up 48% of total industry employment.

SIC

25

This major group which includes establishments engaged in manufacturing household, office, public building, and restaurant furniture; and office and store fixtures, recorded a decline of 300 workers between 1978 and 1980. The greater part of this drop is attributable to the household furniture segment (SIC 251), which accounts for 70 percent of employment.

Maintenance and production workers account for 70 percent of total employment and are distributed among 70 different occupations. Six occupations represent nearly 40 percent of employment in the production worker category: cabinet makers (370), supervisors (320), wood sanders (330), woodworking machine operators (320), painters (210), and assemblers (780). Much of the employment in this category is made up of skilled crafts, most of which are apprenticeable.

The second largest occupational category, clerical workers, account for only 13 percent of total employment. This category is dominated by employees in the shipping and receiving occupations, which represent more than 25 percent of the 1100 clerical positions.

The third largest occupational category is managers and officers, accounting for nearly nine percent of total employment. All other occupational categories represent less than eight percent of total employment.

OCCUPATIONS OF EMPLOYEES
FURNITURE AND FIXTURES (SIC 25)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	740	8.99	12
Professional Occupations	200	2.43	N/A
Industrial Engineer	30	0.32	1
Mechanical Engineer	10	0.08	9
All Other Engineers	10	0.17	N/A
Systems Analyst, EDP	10	0.14	N/A
Purchasing Agent/Buyer	30	0.38	2
Accountants/Auditors	60	0.66	5
Personnel and Labor Relations Spec	20	0.19	2
Designer	10	0.17	2
All Other Professional Workers	20	0.18	N/A
Technical Occupations	90	1.09	N/A
Computer Programer	20	0.24	2
Drafter	50	0.55	8
All Other Engineering Technicians	10	0.07	N/A
All Other Technicians	10	0.14	N/A
Service Occupations	120	1.46	N/A
Janitors, Porters and Cleaners	60	0.66	5
Guards & Doorkeepers	20	0.21	9
Food Service Workers	10	0.10	N/A
Supervisors, Nonworking Service	30	0.30	9
Maintenance and Production Occupations	5,780	70.23	N/A
Mechanic, Automotive	10	0.08	8
Mechanic, Maintenance	20	0.25	7
Truck Driver	120	1.41	8
Cabinetmaker	370	4.46	8
Carpenter	40	0.49	8
Delivery and Route Worker	40	0.51	9
Electrician	10	0.17	N/A
Filers, Grinders	10	0.18	7
Supervisor, Nonworking	320	3.84	2
Industrial Truck Operator	40	0.47	5
Inspector	70	0.87	4
Laminating Machine Operator Furniture	30	0.30	10
Machinist	10	0.15	9

SIC 25 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Mattress Maker	190	2.28	12
Maintenance Repairer, General Utility	40	0.43	4
Helper, Trades	100	1.22	7
Order Filler	20	0.25	5
Painter, Maintenance	10	0.07	5
Plumber/Pipefitter	10	0.07	5
Production Packager	130	1.55	4
Sewing Machine Operator, Regular Equipment, Nongarment	240	2.96	4
Sewing Machine Operator, Special and/or Automatic Equipment, Nongarment	70	0.80	7
Sheet Metal Worker	10	0.09	N/A
Stationary Boiler Firer	10	0.09	8
Tool and Die Maker	20	0.24	7
Welders and Flamecutters	50	0.58	8
Furniture Finisher	30	0.32	9
Band-Scroll Saw Operator	30	0.34	3
Boring-Machine Operator	50	0.60	3
Cut-Off-Saw Operator, Lumber	70	0.86	5
Dado Operator	10	0.06	11
Dowel Machine Operator	10	0.08	5
Gluing-Machine Operator	10	0.09	9
Lay-Out Marker, Wood	10	0.13	6
Lathe Operator, Wood	30	0.37	5
Machine-Setter, Woodworking	20	0.24	9
Machine Tool Operator, Combination	80	1.00	13
Machine Tool Operator, Numerical-Control	10	0.08	13
Machine Tool Setter, Metalworking	10	0.17	12
Wood Machinist	40	0.43	11
Mortising Machine Operator	10	0.07	7
Off-Bearer, Wooden Parts	30	0.37	7
Plastic-Top Installer	20	0.21	12
Power-Screwdriver Operator	30	0.37	13
Ripsaw Operator	90	1.13	5
Rubber	40	0.52	6
Sander, Wood	330	4.01	4
Shaper, Hand	10	0.17	9
Shaper,/Router	60	0.69	4
Sorter, Upholstery Parts	10	0.17	6

SIC 25 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Springer	60	0.69	9
Stapler,Mattress and Bedspring	20	0.26	11
Tenoner Operator	40	0.42	6
Upholstery Trimmer	50	0.60	8
Variety Saw Operator	60	0.70	4
Woodworking Machine Operator	230	2.80	5
Painter, Production	210	2.55	3
Punch-Press Operator, Metal	90	1.10	11
Shear/Slitter Operator, Metal	10	0.10	4
Upholsterer	160	1.94	7
Upholstery Cutter	110	1.38	5
Power Brake/Bending Machine Operator, Metal	40	0.53	3
Gluer/Cementer, Hand	20	0.24	5
Cushion Maker	40	0.49	10
Assembler	780	9.44	5
Decorator, Hand	20	0.21	7
All Other Skilled Craft/Kindred Workers	50	0.61	N/A
All Other Semiskilled Craft and or Kindred Workers	290	3.55	N/A
All Other Laborers	460	5.54	N/A
Clerical Occupations	1,100	13.37	N/A
Bookkeeping/Billing Machine Operator	10	0.08	6
Computer Operator	20	0.21	2
Keypunch Operator	20	0.23	3
Stenographer	10	0.07	5
Accounting Clerk	80	0.96	8
Bookkeeper, Hand	140	1.75	4
File Clerk	20	0.24	4
General Clerk, Office	190	2.35	4
Order Clerk	50	0.58	4
Payroll/Timekeeping Clerk	30	0.36	2
Personnel Clerk	10	0.06	6
Procurement Clerk	10	0.15	6
Secretary	140	1.71	4
Switchboard Operator/Receptionist.	10	0.13	4
Typist.	20	0.24	4
Clerical Supervisor.	30	0.32	3
All Other Office Clerical Workers	40	0.36	10
Production Clerk/Coordinator	30	0.30	4
Shipping Packer	140	1.67	4

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Shipping/Receiving Clerk. . . .	110	1.34	4
Stock Clerk, Stockroom	40	0.44	5
All Other Plant Clerical Worker	50	0.54	N/A
Sales Occupations	200	2.43	N/A
Sales Representative	190	2.26	5
Sales Clerk	10	0.07	21
TOTAL	8,230	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
HOUSEHOLD FURNITURE (SIC 251)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	450	8.05	6
Professional Occupations	90	1.61	N/A
Industrial Engineer	10	0.12	16
Purchasing Agent/Buyer	20	0.28	12
Accountants/Auditors	40	0.68	24
Personnel & Labor Relations Specialists	10	0.12	17
Designer	10	0.10	19
Technical Occupations	10	0.18	N/A
Computer Programmer	10	0.18	16
Service Occupations	70	1.25	N/A
Janitors, Porters & Cleaners . . .	30	0.61	22
Guards & Doorkeepers	20	0.32	29
Supervisor, Nonworking, Service. .	20	0.28	46
Maintenance & Production Occupations	4,110	73.52	N/A
Mechanic, Maintenance.	20	0.27	32
Truck Driver	80	1.42	34
Cabinetmaker	160	2.86	38
Carpenter.	10	0.25	22
Delivery & Route Worker	40	0.75	29
Supervisor, Nonworking	180	3.28	9
Industrial Truck Operator	20	0.37	28
Inspector.	50	0.91	17
Laminating Machine Operator - Furniture	20	0.28	37
Mattress Maker	190	3.38	36
Maintenance, Repairer, General Utility	30	0.54	15
Helper, Trades	40	0.68	34
Order Filler	10	0.16	39
Production Packager.	80	1.42	13
Sewing-Machine Operator, Regular Equipment - Nongarment.	230	4.18	14
Sewing Machine Operator, Special Equipment - Nongarment	50	0.84	26
Stationary Boiler Firer	10	0.12	31
Furniture Finisher	30	0.48	29

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Band-Scroll Saw Operator	30	0.46	11
Boring-Machine Operator	50	0.86	9
Cut-Off-Saw Operator, Lumber	60	1.08	17
Dado Operator	10	0.09	36
Dowel Machine Operator	10	0.12	16
Gluing-Machine Operator	10	0.12	35
Lay-Out Marker, Wood	10	0.19	19
Lathe Operator, Wood	30	0.55	17
Machine-Setter, Woodworking	20	0.36	31
Wood Machinist	30	0.50	43
Mortising-Machine Operator	10	0.10	27
Off-Bearer	30	0.54	22
Power-Screwdriver Operator	30	0.55	41
Ripsaw Operator	90	1.56	18
Rubber	40	0.70	23
Sander,Wood	310	5.55	15
Shaper, Hand	10	0.25	28
Shaper/Router	50	0.95	12
Sorter,Upholstery Parts	10	0.25	21
Springer	60	0.99	30
Stapler,Mattress/ Bedsprings	20	0.39	35
Tenoner Operator	30	0.61	20
Upholstery Trimmer	50	0.86	27
Variety Saw Operator	60	1.04	12
Woodworking-Machine Operator	190	3.47	19
Painter,Production	150	2.75	13
Upholsterer	160	2.79	23
Upholstery Cutter	110	2.00	16
Gluer/Cementer, Hand	20	0.30	21
Cushion Maker	40	0.72	31
Assembler	540	9.73	16
Decorator, Hand	20	0.32	23
All Other Skilled Craft and Kindred Workers	40	0.77	N/A
All Other Semiskilled Craft and Kindred Workers	250	4.56	N/A
All Other Laborers	280	5.06	N/A
Clerical Occupations	750	13.42	N/A
Bookkeeping/Billing Machine Operator	10	0.12	24
Computer Operator	10	0.23	13
Keypunch Operator	10	0.18	20
Accounting Clerk	40	0.70	43
Bookkeeper, Hand	90	1.56	15
File Clerk	10	0.23	20

SIC 251 (cont.)

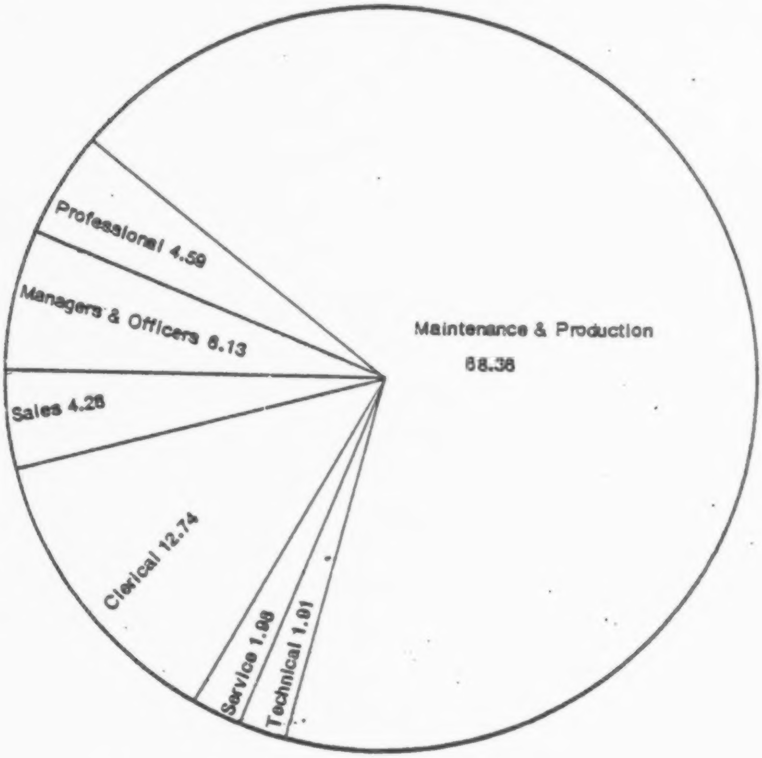
OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
General Clerk, Office.	140	2.55	16
Order Clerk	30	0.50	20
Payroll/Timekeeping Clerk.	20	0.41	11
Personnel Clerk	10	0.09	24
Procurement Clerk	10	0.18	28
Secretary.	80	1.47	18
Switchboard Operator/Receptionist.	10	0.16	21
Typist	10	0.12	37
Clerical Supervisor.	10	0.14	30
All Other Office Clerical.	40	0.65	N/A
Production Clerk/Coordinator . . .	10	0.23	27
Shipping Packer	100	1.80	14
Shipping/Receiving Clerk	80	1.49	18
Stock Clerk, Stockroom	30	0.54	20
All Other Plant Clerical	10	0.21	N/A
Sales Occupations	110	1.97	N/A
Sales Representative	100	1.87	29
Sales Clerk	10	0.10	N/A
TOTAL	5,590	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

PAPER AND ALLIED PRODUCTS (SIC 26)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	All Other Semiskilled Workers	3,030
2.	All Other Laborers and Unskilled Workers	2,440
3.	Managers and Officers	1,760
4.	Sales Representative	1,160
5.	Supervisor, Nonworking	1,040
6.	Production Packager	810
7.	All Other Skilled Workers	570
8.	Coater Operator, Off-Machine	410
9.	Paper Reel/Rewinder Operator	390
10.	Secretary	370

These 10 occupational categories make up 42% of total industry employment.

SIC

26

This major group includes the manufacture of pulps from wood and other cellulose fibers, and from rags; the manufacture of paper and paperboard; and the manufacture of paper and paperboard into converted products such as coated paper, bags, boxes and envelopes.

This nondurable goods industry group had a 1980 employment level within Massachusetts of 28,900 or 4.2 percent of total manufacturing. It is composed of the following specific 3-digit industries.

SIC	INDUSTRY
261	Pulp Mills
262	Paper Mills
263	Paperboard Mills
264	Misc. Converted Paper Prod.
265	Paperboard Containers & Boxes
266	Building Paper and Board Mills

This industry as a whole is not expected to grow in the near term; job openings will continue to exist due to separations.

The occupational profile of the paper industry resembles the other nondurable industries in that they are all labor intensive. This group averages over 70 percent production and maintenance workers as contrasted with durable goods where this category averages only 60 percent of total employment. In this survey, production and maintenance workers comprised 68.3 percent of total industry employment, a decrease from the 72.1 percent recorded during the 1977 survey. Nationally, production and maintenance workers represented 76.9 percent of paper and allied products employment in 1977; however, this difference could be due to the different mixes of particular industries within the paper group.

The decline in the production worker's share of total employment is magnified by the slight decrease in the industry's employment between survey periods. The large decrease in production workers (1500) was partially offset by an increase in professional workers (400) and sales workers (350), increasing their share of total employment by 1.5 and 1.3 percentage points respectively.

The paperboard containers and boxes industry (SIC 265) is the second largest employer within the paper groups, accounting for 29 percent of employment. This industry is also the most labor-intensive; production and maintenance workers account for 76.2 percent of the total industry employment. While this is a much higher percentage than the state's norm for SIC 26 (68.3), the higher rate is very close to the 1977 national percentage of production and maintenance workers in the paper group (76.9).

In contrast, the "white-collar" occupations have a much smaller share of employment, as the following table illustrates:

Industry	Employment 1980	Percentage Share of Total Employment		
		Managers	Professionals	Technical
26 Paper	28.9	6.13	4.59	1.91
262 Paper Mills	6.0	5.08	4.22	1.35
264 Misc Converted Paper Prod	12.8	7.91	6.45	3.53
265 Paperboard Containers & Boxes	8.3	4.41	2.15	0.24

The lack of professional and technical staff within SIC 265 may be due to the industry purchasing rather than manufacturing its paper, therefore, not needing as many engineers as well as engineering and science technicians found in the other paper industries.

OCCUPATIONS OF EMPLOYEES
PAPER AND ALLIED PRODUCTS (SIC 26)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	1,760	6.13	6
Professional Occupations	1,320	4.59	N/A
Chemical Engineer	110	0.39	12
Electrical/Electronic Engineer	30	0.10	12
Industrial Engineer	80	0.27	4
Mechanical Engineer	120	0.42	8
All Other Engineers	30	0.09	N/A
Chemist	150	0.53	9
All Other Physical Scientists	10	0.02	N/A
Systems Analyst, EDP	50	0.15	22
Purchasing Agent/Buyer	190	0.65	6
Accountants/Auditor	210	0.74	8
Commercial Artist	110	0.37	11
Nurse, Professional	20	0.05	3
Personnel/Labor Relations Specialist	80	0.25	8
Designer	60	0.21	15
All Other Professional Workers	70	0.23	N/A
Technical Occupations	550	1.91	N/A
Computer Programmer	40	0.13	29
Drafter	50	0.18	12
All Other Engineering Technicians	20	0.08	N/A
Science Technicians	110	0.39	10
All Other Technicians	330	1.16	N/A
Service Occupations	570	1.98	N/A
Janitors, Porters, and Cleaners	200	0.68	4
Guards and Doorkeepers	40	0.13	12
Food Service Workers	10	0.02	29
Supervisor, Nonworking—Service Only	110	0.36	7
All Other Service Workers	210	0.74	N/A
Maintenance and Production Occupations	19,640	68.36	N/A
Mechanic, Automotive	40	0.13	9
Mechanic, Maintenance	300	1.03	9
All Other Mechanics and Repairers	120	0.40	N/A
Truck Driver	230	0.78	5
Carpenter	60	0.19	12
Delivery and Route Worker	80	0.27	11
Electrician	170	0.58	5
Supervisor, Nonworking	1,040	3.64	3

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Industrial Truck Operator	670	2.33	6
Inspector	210	0.72	7
Instrument Repairer	40	0.12	19
Machinist	220	0.75	13
Maintenance Repairer, General Utility	190	0.65	10
Helper, Trades	230	0.80	18
Order Filler	180	0.61	11
Painter, Maintenance	30	0.09	13
Plumber/Pipefitter	70	0.25	9
Press Operator/Plate Printer	760	2.65	9
Production Packager	810	2.84	14
Scrapper/Stripper	250	0.86	5
Stationary Boiler Firer	160	0.55	4
Stationary Engineer	110	0.39	6
Tool & Die Maker	60	0.20	14
Welders and Flamecutters	30	0.11	7
Automatic-Assembly-Machine Attendant	30	0.08	32
Back Tender	280	0.96	3
Beater Engineer	160	0.56	3
Beater	170	0.60	4
Bleacher Operator, Pulp	20	0.07	18
Box Maker, Paperboard	230	0.81	13
Chemical Operator A	10	0.02	22
Chemical Operator B	10	0.04	15
Chipper	10	0.04	23
Coater Operator, Off-Machine	410	1.44	16
Coating Mixer Tender	70	0.24	16
Combiner Operator	80	0.29	19
Convolute-Tube/Spiral Tube Winder	80	0.22	16
Corner Cutter	40	0.12	17
Corrugator-Knife Operator	50	0.17	11
Corrugator Operator	110	0.38	10
Cut-Off Machine Operator, Tubing	30	0.11	22
Cut and Creasing Press Operator	230	0.81	31
Cylinder Machine Tender	70	0.23	7
Decker Operator	10	0.03	16
Die Cutter	300	1.04	8
Die Maker	40	0.14	7
Die Mounter	50	0.17	18
Digester Operator	10	0.02	14
Digester Operator, Helper	10	0.03	16
Ending Machine Operator	170	0.58	12
Etcher/Engraver	40	0.14	12
Flexo-Folder-Gluer Operator	200	0.70	13
Folding Machine Feeder	30	0.09	28

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Folding-Machine Operator, Paper	50	0.16	11
Four-Corner-Stayer-Machine Operator	30	0.10	24
Fourdrinier Machine Tender	180	0.61	3
Layboy Tender	100	0.36	21
Machine Setter, Paper Goods	190	0.65	15
Panel Machine Operator	80	0.27	20
Paper-Cup Machine Operator	340	1.17	12
Paper Reel/Rewinder Operator	390	1.34	10
Printer/Slotter Operator	130	0.44	6
Printer/Slotter Feeder	140	0.49	20
Pulp Refiner Operator	40	0.14	14
Pulper	110	0.37	6
Recovery Operator, Papermaking	10	0.04	19
Scorer	30	0.10	19
Slitter-Creaser-Slotter Operator	90	0.30	10
Slitter-Scorer-Cut-Off Operator	30	0.08	15
Slitting Machine Operator	300	1.04	11
Slotter Operator	20	0.07	19
Stapling Machine Operator	50	0.17	8
Supercalender Operator	40	0.12	11
Taping Machine Operator	90	0.31	7
Tester	160	0.56	4
Waxing Machine Operator	80	0.26	12
Winder, Paper Machine	230	0.79	4
Wrapping Machine Operator	120	0.41	12
Conveyor Operator/Tender	50	0.18	11
Fourth/Fifth Hand Paper Machine	270	0.95	5
Baling Machine Operator	190	0.66	5
Cutter, Machine	290	0.99	7
Screen-Stencil Printer/Setter	90	0.32	22
Embossing, Stamping/Marking Machine Operator	250	0.85	13
Assembler	270	0.93	9
Mixer/Blender, Chemicals Products	150	0.51	21
All Other Skilled Workers	570	2.00	N/A
All Other Semiskilled Workers	3,030	10.59	N/A
All Other Laborers	2,440	8.49	N/A
Clerical Occupations	3,660	12.74	N/A
Bookkeeping/Billing Machine Operator	60	0.19	16
Computer Operator	60	0.22	11
Keypunch Operator	100	0.34	16
All Other Office Machine Operators	10	0.04	17
Stenographers	10	0.04	24
Accounting Clerk	250	0.86	8
Bookkeeper, Hand	140	0.49	7

SIC 26 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
File Clerk	20	0.08	17
General Clerk, Office	340	1.18	5
Order Clerk	290	1.02	6
Payroll/Timekeeping Clerk	130	0.45	5
Personnel Clerk	40	0.13	7
Procurement Clerk	50	0.17	10
Receptionist	50	0.16	22
Secretary	370	1.27	9
Statistical Clerk	40	0.12	23
Switchboard Operator	20	0.05	10
Switchboard Operator/Receptionist	110	0.38	6
Typist	80	0.28	14
Clerical Supervisor	160	0.56	15
Box Estimator, Paperboard Products	110	0.39	10
All Other Office Clerical Workers	110	0.37	N/A
Production Clerk/Coordinator	310	1.08	5
Shipping Packer	160	0.56	7
Shipping/Receiving Clerk	300	1.04	5
Weigher, Record Keeping	10	0.04	14
Stock Clerk, Stock Room	170	0.58	6
All Other Plant Clerical Workers	160	0.54	N/A
Sales Occupations	1,230	4.28	N/A
Sales Representative	1,160	4.06	7
Sales Clerk	70	0.23	17
TOTAL	28,730	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
PAPER MILLS, EXCEPT BUILDING PAPER (SIC 262)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	300	5.08	14
Professional Occupations	250	4.22	N/A
Chemical Engineer	30	0.53	10
Electric & Electronic Engineer	10	0.10	25
Industrial Engineer	10	0.21	20
Mechanical Engineer	10	0.21	14
Chemist	50	0.75	21
Purchasing Agent/Buyer	30	0.47	17
Accountants/Auditors	50	0.84	14
Nurse, Professional	10	0.16	13
Personnel & Labor Relations Specialists	20	0.30	13
All Other Professional Workers	40	0.62	N/A
Technical Occupations	80	1.35	N/A
Computer Programmer	10	0.16	18
Drafter	10	0.18	19
Science Technicians	40	0.58	8
All Other Technicians	30	0.42	N/A
Service Occupations	80	1.35	N/A
Janitors, Porters & Cleaners	40	0.72	11
Guards & Doorkeepers	20	0.38	28
All Other Service Workers	20	0.30	N/A
Maintenance & Production Occupations	4,380	74.00	N/A
Mechanic, Automotive	10	0.11	27
Mechanic, Maintenance	80	1.36	24
All Other Mechanics & Repairers	40	0.70	N/A
Truck Driver	30	0.55	8
Carpenter	10	0.13	30
Electrician	70	1.21	10
Supervisor, Nonworking	290	4.94	7
Industrial Truck Operator	140	2.40	21
Inspector	40	0.62	24
Instrument Repairer	10	0.20	25
Maintenance Repairer, General Utility	40	0.74	28
Order Filler	40	0.69	27
Painter, Maintenance	20	0.26	14
Plumber/Pipefitter	40	0.63	15

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Stationary Boiler Firer	80	1.31	16
Stationary Engineer	60	1.06	12
Welders and Flamecutters	10	0.23	18
Back Tender	240	4.02	8
Beater Engineer	140	2.39	12
Beater	130	2.17	15
Die Cutter	40	0.74	27
Fourdrinier-Machine Tender	180	2.96	8
Paper Reel/Rewinder Operator	120	2.05	7
Pulper	90	1.48	22
Slitting Machine Operator	100	1.68	28
Supercalender Operator	30	0.53	23
Tester	130	2.22	15
Wet-Machine Tender	10	0.21	32
Winder, Paper Machine	180	3.06	10
Fourth/Fifth Hand, Paper Machine	140	2.35	14
Baling Machine Operator	40	0.62	21
Cutter, Machine	80	1.38	24
Embossing,Stamping/Marking Machine Operator	30	0.53	31
All Other Bindery Workers	40	0.64	N/A
All Other Skilled Craft and Kindred Workers	210	3.51	N/A
All Other Semiskilled Craft and Kindred Workers	860	14.44	N/A
All Other Laborers	560	9.50	N/A
Clerical Occupations	670	11.32	N/A
Bookkeeping/Billing Machine Operator	20	0.25	27
Computer Operator	10	0.18	17
Keypunch Operator	30	0.42	25
Stenographer	10	0.15	26
Accounting Clerk	60	0.92	11
Bookkeeper, Hand	10	0.21	26
General Clerk,Office	20	0.25	24
Order Clerk	70	1.11	20
Payroll/Timekeeping Clerk	30	0.42	16
Personnel Clerk	20	0.25	20
Procurement Clerk	20	0.26	24
Secretary	70	1.21	12
Switchboard Operator/Receptionist	20	0.31	14
Typist	20	0.35	29
Clerical Supervisor	30	0.43	23
All Other Office Clerical	20	0.32	N/A
Production Clerk/Coordinator	50	0.90	15
Shipping Packer	80	1.29	17

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Shipping/Receiving Clerk.	40	0.62	14
Stock Clerk, Stockroom	60	1.02	22
All Other Plant Clerical.	10	0.19	N/A
Sales Occupations	170	2.70	N/A
Sales Representative	150	2.47	19
Sales Clerk	20	0.26	23
TOTAL	5,920	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
MISC. CONVERTED PAPER PRODUCTS (SIC 264)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	1,030	7.91	31
Professional Occupations	840	6.45	N/A
Industrial Engineer.	50	0.36	28
Mechanical Engineer.	100	0.76	32
All Other Engineers.	120	0.95	N/A
All Other Natural and Mathematical Scientists	110	0.84	N/A
Purchasing Agent/Buyer	110	0.85	33
Nurse, Professional	10	0.05	14
All Other Professional Workers . . .	340	2.64	N/A
Technical Occupations	460	3.53	N/A
All Other Engineer Technicians . . .	80	0.62	N/A
All Other Technicians.	380	2.91	N/A
Service Occupations.	320	2.46	N/A
Janitors, Porters & Cleaners	100	0.78	21
All Other Service Workers.	220	1.67	N/A
Maintenance & Production Occupations .	7,720	59.29	N/A
All Other Mechanics & Repairers. . .	140	1.11	N/A
Supervisor, Nonworking	450	3.48	20
All Other Bindery Workers.	400	3.07	N/A
All Other Skilled Craft and Kindred Workers	770	5.90	N/A
All Other Semiskilled Craft and Kindred Workers	4,455	34.25	N/A
All Other Laborers	1,600	12.30	N/A
Clerical Occupations	1,960	15.05	N/A
All Other Office Machine Operators .	130	0.97	N/A
General Clerk, Office.	270	2.10	19
Order Clerk.	170	1.33	33
Payroll/Timekeeping Clerk.	60	0.43	33
All Other Office Clerical.	850	6.56	N/A
Production Clerk/Coordinator	170	1.32	26
Shipping/Receiving Clerk	180	1.34	28

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Sales Occupations	690	5.30	N/A
Sales Representative	660	5.04	N/A
Sales Clerk	30	0.23	N/A
TOTALS	13,020	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
PAPERBOARD CONTAINERS AND BOXES (SIC 265)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	370	4.41	8
Professional Occupations	180	2.15	N/A
Industrial Engineer.	10	0.09	34
Mechanical Engineer.	10	0.08	23
Systems Analyst, EDP	10	0.13	25
Purchasing Agent/Buyer	40	0.45	11
Accountants/Auditors	30	0.33	16
Commercial Artist.	20	0.20	30
Personnel and Labor Relations Specialists	20	0.21	21
Designer	30	0.34	21
All Other Professional Workers . . .	10	0.04	N/A
Technical Occupations	20	0.24	N/A
All Other Technicians.	20	0.24	N/A
Service Occupations	110	1.31	N/A
Janitors, Porters & Cleaners	40	0.52	12
Supervisors, Nonworking, Service . .	60	0.74	22
All Other Service Workers.	10	0.08	N/A
Maintenance & Production Occupations .	6,390	76.16	N/A
Mechanic, Maintenance.	110	1.33	15
All Other Mechanics & Repairers. . .	40	0.53	N/A
Truck Driver	130	1.60	19
Electrician	10	0.13	21
Supervisor, Nonworking	250	2.96	11
Industrial Truck Operator	200	2.37	15
Inspector	110	1.27	27
Machinist	40	0.44	23
Maintenance Repairer, General Utility	70	0.78	24
Helper, Trades	70	0.79	32
Press Operator/Plate Printer	220	2.66	19
Production Packager	230	2.77	22
Scrapper/Stripper.	240	2.87	16
Stationary Boiler Firer.	20	0.24	28
Stationary Engineer.	10	0.16	26
Tool and Die Maker	40	0.48	30

OCCUPATION	EMPLOYMENT Number	Percent	Relative Error Percent
Coater Operator, Off-Machine	40	0.43	34
Corrugator-Knife Operator	40	0.50	21
Corrugator Operator	100	1.24	28
Cut & Creasing Press Operator	150	1.81	23
Die Cutter	200	2.38	21
Die Maker	40	0.49	22
Die Mounter	40	0.42	22
Flexo-Folder-Gluer Operator	170	2.08	31
Power-Press Tender	40	0.48	30
Printer-Slotter Operator	130	1.50	20
Printer-Slotter Feeder	100	1.18	30
Slitting Machine Operator	30	0.33	32
Stapling-Machine Operator	20	0.22	33
Taping Machine Operator	90	1.06	24
Tester	10	0.09	29
Waxing Machine Operator	60	0.70	24
Conveyor Operator/Tender	20	0.27	33
Baling Machine Operator	110	1.30	14
Mixer/Blender, Chemicals and Chemical Products	20	0.18	26
All Other Skilled Craft and Kindred Workers	50	0.58	N/A
All Other Semiskilled Craft and Kindred Workers	1,490	17.84	N/A
All Other Laborers	1,650	19.81	N/A
Clerical Occupations	980	11.68	N/A
Bookkeeping/Billing Machine Operator	20	0.19	22
Computer Operator	20	0.27	25
Keypunch Operator	10	0.12	26
Accounting Clerk	40	0.46	33
Bookkeeper, Hand	60	0.66	26
General Clerk, Office	50	0.57	28
Order Clerk	50	0.56	19
Payroll/Timekeeping Clerk	40	0.48	14
Personnel Clerk	10	0.14	23
Procurement Clerk	10	0.15	18
Secretary	50	0.63	18
Statistical Clerk	10	0.13	30
Switchboard Operator	10	0.13	17
Switchboard Operator/Receptionist	40	0.44	13
Typist	30	0.34	34
Clerical Supervisor	50	0.60	23
Box Estimator, Paperboard Products	70	0.81	18
All Other Office Clerical	20	0.19	N/A
Production Clerk/Coordinator	80	0.98	18

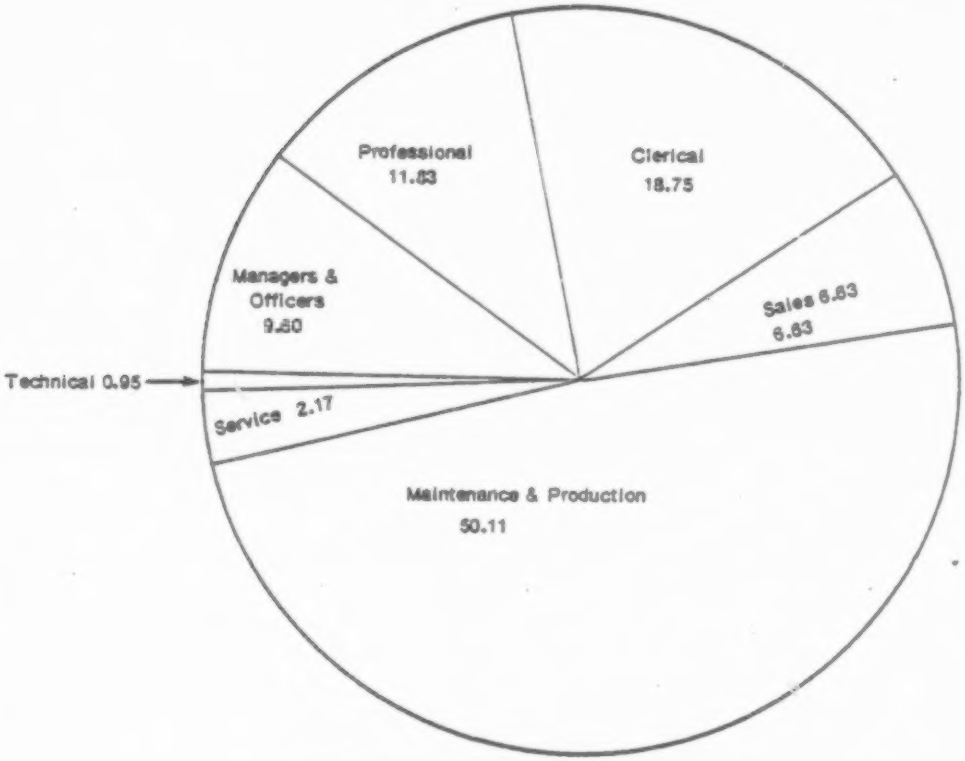
OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Shipping Packer	50	0.57	22
Shipping/Receiving Clerk	80	0.94	12
Stock Clerk, Stockroom	20	0.22	21
All Other Plant Clerical	160	1.88	N/A
Sales Occupations	340	4.05	N/A
Sales Representative	320	3.89	11
Sales Clerk	20	0.20	N/A
TOTAL	8,390	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

PRINTING, PUBLISHING, AND ALLIED INDUSTRIES (SIC 27)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	Managers and Officers	4,230
2.	Offset Lithographic Operator	2,800
3.	Sales Representative	2,700
4.	Bindery Worker, Assembly	1,890
5.	Writer and/or Editor	1,660
6.	All Other Semiskilled Workers	1,580
7.	Reporters and Correspondents	1,540
8.	Secretary	1,410
9.	All Other Laborers and Unskilled Workers	1,380
10.	All Other Bindery Workers	1,370

These 10 occupational categories make up 47% of total industry employment.

SIC

27

This major group which includes most establishments in printing, bookbinding, typesetting, engraving and publishing of newspapers, books and periodicals has the largest employment in the nondurable goods sector of the Massachusetts economy. While the Boston SMSA accounts for more than 55 percent of employment, the industry is well stratified throughout the state. Small job shops, employing less than 10 persons, account for over half of the approximate 1400 establishments.

Maintenance and production occupations account for 50 percent of employment in the industry. Offset lithographic operators with employment of 2800, and bindry workers with employment of nearly 3600, are the two largest occupational categories in the entire industry.

Nearly ten percent of employment is concentrated in management occupations, a relatively high percentage compared to most other industries. One likely explanation is the large number of small firms that are incorporated, and whose owners are all counted as managers.

In the professional category, writers, reporters and artists account for seventy-percent of employment. Other occupations with substantial employment include delivery and route workers, compositers, paste up workers, secretaries and bookkeepers.

Sales occupations with nearly 3000 workers, account for 6.6 percent of employment. This share of sales workers is more than that of any two digit manufacturing industry.

Newspapers, publishing and printing (SIC 271) with employment of nearly 14,000 accounts for 30 percent of employment. The distribution of employment by major occupational category differs substantially from that of the two-digit industry. Much larger shares of employment were recorded in the professional (11.8 percent vs 18.9 percent) and sales (6.6 percent vs 10.1 percent) categories. While a significantly smaller employment share was recorded in maintenance and production (50.1 percent vs 40.7 percent).

Commercial printing, which includes letterpress, screen, lithographic, engraving and plate printing (SIC 275), with employment of more than 14,000, has had nearly 12 percent growth since 1977.

A comparison of the occupational profile of SIC 271 vs 275 highlights the differences that can exist within a two digit industry. The chart below displays this point.

	PERCENT	
	SIC 271	SIC 275
Managers and Officers	6.83	10.83
Professional	18.86	2.52
Technical	0.59	0.61
Service	4.38	1.16
Maintenance & Production	40.68	66.62
Clerical	18.56	14.71
Sales	10.10	3.57

OCCUPATIONS OF EMPLOYEES
PRINTING, PUBLISHING AND ALLIED INDUSTRIES (SIC 27)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	4,230	9.60	3
Professional Occupations	5,230	11.83	N/A
Electrical/Electronic Engineer . .	10	0.01	17
Industrial Engineer.	10	0.02	16
Mechanical Engineer.	20	0.04	7
All Other Engineers.	10	0.01	N/A
Systems Analyst, EDP..	50	0.11	20
Photographer	200	0.44	7
Purchasing Agent/Buyer	130	0.30	8
Accountants/Auditors	240	0.53	11
Commercial Artist.	490	1.10	9
Writer/Editor.	1,660	3.78	10
Lawyer	10	0.02	25
Librarian	40	0.08	17
Personnel and Labor Relations Specialists	90	0.19	11
Reporters/Correspondents	1,540	3.49	7
Designer	140	0.32	23
Estimator, Printing Service.	110	0.24	8
All Other Professional Workers . .	480	1.07	N/A
Technical Occupations.	420	0.95	N/A
Computer Programmer.	100	0.23	14
Drafter.	220	0.49	8
Electrical/Electronic Technicians.	50	0.10	14
All Other Technicians.	50	0.10	N/A
Service Occupations.	960	2.17	N/A
Janitors, Porters & Cleaners . . .	450	1.02	10
Guards & Doorkeepers	80	0.17	30
Supervisor, Nonworking Service . .	30	0.06	31
All Other Service Workers.	400	0.90	N/A
Maintenance & Production Occupations	22,160	50.11	N/A
Mechanic, Automotive	20	0.05	28
Mechanic, Maintenance.	90	0.21	14
All Other Mechanics & Repairers. .	70	0.16	N/A
Developer/Projection Printer . . .	20	0.03	28
Truck Driver	200	0.45	31
Carpenter.	30	0.06	21
Delivery & Route Worker.	1,030	2.34	12
Electrician.	50	0.11	14

SIC 27 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Supervisor, Nonworking.	450	1.01	6
Industrial Truck Operator	120	0.27	13
Inspector	230	0.52	16
Maintenance Repairer, General Utility	190	0.42	23
Helper, Trades	30	0.07	10
Order Filler.	90	0.20	22
Painter, Maintenance.	10	0.02	30
Plumber/Pipfitter	10	0.01	32
Production Packager	560	1.27	25
Offset Lithographic Operator. . . .	2,800	6.36	4
Platemaker.	400	0.90	5
Stripper.	780	1.77	5
Camera Operator, Printing	560	1.27	6
Strike-On Machine Operator.	60	0.13	18
Bag-Machine Operator.	10	0.01	62
Etcher/Engraver	10	0.01	22
Layboy Tender	50	0.10	17
Tester.	30	0.07	45
Vulcanizer, Rubber Plate.	10	0.01	13
Conveyor Operator/Tender.	30	0.05	18
Copy Marker	40	0.09	24
Hand Compositor	650	1.48	11
Imposer & Majeup Arranger	320	0.71	20
Line Cast Machine Operator.	200	0.44	33
Line Cast Machine Tender.	80	0.19	33
Pasteup Man/Women	780	1.78	7
Phototypesetting Machine Keyboard Operator	220	0.49	13
Phototypesetting Machine Monitor. .	60	0.12	15
Phototypesetter Operator...	250	0.55	14
Proofreader, Composed Copy.	500	1.14	11
Retoucher	20	0.04	13
Electrotyper.	10	0.01	19
Photoengraver	130	0.29	17
Ink Worker.	20	0.04	30
Letter Press Operator,Sheet, Roll or Web Fed	1,290	2.94	20
Letterset Press Operator, Sheet Roll or Web Fed	40	0.08	23
Steel Die Press Operator	50	0.11	11
Press Assistants and Feeders. . . .	890	2.01	8
Setter, Binder Machines	220	0.49	10
Mailer	440	1.00	30
Cutter Machine.	160	0.35	11
Screen or Stencil Printer/Setter. .	100	0.21	22
Screen Maker, Photographic Process.	20	0.05	27

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Bookbinder, Hand	150	0.33	15
Bookbinder, Machine	800	1.81	10
Bindery Worker, Assembly	1,890	4.29	8
Bindery Worker, Stitcher	300	0.68	12
All Other Bindery Workers	1,370	3.12	N/A
All Other Skilled Craft and Kindred Workers	260	0.59	N/A
All Other Semiskilled Craft and Kindred Workers	1,580	3.57	N/A
All Other Laborers	1,380	3.12	N/A
Clerical Occupations	8,290	18.75	N/A
Addressing Machine Operator	10	0.01	34
Bookkeeping/Billing Machine Operator	80	0.17	21
Computer Operator	80	0.18	18
Keypunch Operator	130	0.28	9
All Other Office Machine Operators	90	0.21	N/A
Stenographer	20	0.03	18
Accounting Clerk	320	0.73	8
Bookkeeper, Hand	970	2.21	4
Cashier	30	0.07	15
File Clerk	110	0.25	12
General Clerk, Office	690	1.56	6
Order Clerk	210	0.47	18
Payroll/Timekeeping Clerk	100	0.23	5
Personnel Clerk	50	0.11	8
Procurement Clerk	30	0.05	8
Receptionist	50	0.10	21
Secretary	1,410	3.20	6
Statistical Clerk	30	0.06	18
Switchboard Operator	80	0.17	19
Switchboard Operator/Receptionist	140	0.32	9
Messenger	150	0.33	19
Typist	940	2.13	5
Clerical Supervisor	160	0.35	11
Circulation Clerk	250	0.56	11
Classified-Ad Clerk, Newspaper	160	0.36	23
Customer Service Representative Printing & Publishing	170	0.38	12
Telephone-Ad Taker	270	0.60	13
All Other Office Clerical Workers	340	0.57	N/A
Production Clerk/Coordinator	160	0.34	11
Shipping Packer	230	0.52	24
Shipping/Receiving Clerk	590	1.34	10

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Stock Clerk, Stockroom.	100	0.23	19
All Other Plant Clerical Workers. .	140	0.32	N/A
Sales Occupations	2,930	6.63	N/A
Sales Representative.	2,700	6.13	6
Sales Clerk	50	0.10	16
All Other Sales Workers	180	0.40	N/A
TOTAL	44,220	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
PERIODICALS (SIC 272)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	290	17.90	8
Professional Occupations.	250	15.43	N/A
Accountants/Auditors.	10	0.55	5
Commercial Artist	10	0.74	21
Writer/Editor	200	12.19	15
Reporters/Correspondents.	20	0.92	30
Designer.	10	0.30	20
All Other Professional Workers. . .	10	0.75	N/A
Technical Occupations	50	3.09	N/A
Computer Programmer	10	0.37	38
Drafter	50	2.90	37
Service Occupations	10	0.62	N/A
Janitors, Porters & Cleaners. . . .	10	0.62	N/A
Maintenance & Production Occupations.	220	13.58	N/A
Hand Compositor	38	2.35	35
All Other Skilled Craft and Kindred Workers	40	2.17	N/A
All Other Semiskilled Craft and Kindred Workers	110	6.65	N/A
All Other Laborers	30	1.93	N/A
Clerical Occupations	660	40.74	N/A
Keypunch Operators	10	0.37	21
Accounting Clerk	20	1.42	26
Bookkeeper, Hand	60	3.77	13
File Clerk.	10	0.30	19
General Clerk, Office	190	11.57	17
Order Clerk	20	1.48	15
Secretary	130	8.29	18
Typist.	120	7.48	19
Clerical Supervisor	10	0.37	20
Circulation Clerk	10	0.74	20
Customer Service Representative, Printing/Publishing.	20	0.99	11
All Other Office Clerical	40	2.36	N/A
Shipping/Receiving Clerk	20	1.36	35

SIC 272 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Stock Clerk, Stockroom	10	0.30	13
Sales Occupations.	140	8.64	N/A
Sales Representative	140	8.64	18
TOTAL	1,620	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
COMMERCIAL PRINTING (SIC 275)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	1,590	10.83	9
Professional Occupations	370	2.52	N/A
Mechanical Engineer.	10	0.09	7
All Other Engineers.	10	0.07	N/A
Systems Analyst, EDP	20	0.10	33
Photographer	10	0.05	27
Purchasing Agent/Buyer	40	0.26	31
Accountants/Auditors	40	0.28	27
Commercial Artist.	130	0.90	48
Writer/Editor.	10	0.05	40
Personnel & Labor Relations Specialists	20	0.10	10
Estimator Printing Service	70	0.46	29
All Other Professional Workers . .	20	0.16	N/A
Technical Occupations	90	0.61	N/A
Computer Programmer	20	0.11	19
Electrical & Electronic Technician	10	0.08	4
All Other Technicians.	60	0.39	N/A
Service Occupations.	170	1.16	N/A
Janitors, Porters & Cleaners . . .	160	1.07	21
Supervisor, Nonworking	10	0.04	26
Maintenance & Production Occupations	9,780	66.62	N/A
Mechanic, Maintenance	40	0.26	29
All Other Mechanics & Repairers. .	70	0.49	N/A
Developer/Projection Printer . . .	10	0.04	42
Truck Driver	70	0.48	38
Carpenter.	10	0.06	18
Delivery & Route Worker.	160	1.07	28
Electrician.	20	0.10	46
Supervisor, Nonworking	270	1.84	24
Industrial Truck Operator.	60	0.40	11
Helper, Trades	30	0.21	33
Order Filler	30	0.18	37
Offset Lithograph Operator	2,260	15.39	10
Platemaker	340	2.28	17
Stripper	640	4.33	14

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Camera Operator, Printing.	290	1.99	16
Layboy Tender.	30	0.21	20
Hand Compositor	310	2.08	42
Line Cast Machine Operator	60	0.42	49
Pasteup Worker	110	0.75	47
Proofreader, Composed Copy	130	0.86	35
Retoucher.	20	0.12	15
Photoengraver	80	0.54	43
Letter Press Operator, Sheet, Roll or Web.	610	4.16	22
Letterset Press Operator, Sheet Roll or Web Fed	30	0.19	33
Steel Die Press Operator	40	0.27	34
Press Assistants and Feeders . . .	720	4.87	27
Setter, Bindery Machine	150	0.99	38
Cutter Machine	100	0.68	39
Bookbinder, Machine	330	2.26	22
Bindery Worker, Assembly	670	4.57	21
Bindery Worker, Stitching.	140	0.92	41
All Other Bindery Workers.	640	4.36	N/A
All Other Skilled Craft and Kindred Workers	160	1.11	N/A
All Other Semiskilled Craft and Kindred Workers	690	4.69	N/A
All Other Laborers	500	3.40	N/A
Clerical Occupations	2,160	14.71	N/A
Computer Operator	10	0.09	36
Keypunch Operator	50	0.35	21
All Other Office Machine Operators	20	0.16	N/A
Accounting Clerk	90	0.60	24
Bookkeeper, Hand	410	2.78	16
General Clerk,Office	220	1.47	27
Order Clerk.	40	0.25	28
Payroll/Timekeeping Clerk.	30	0.19	35
Personnel Clerk.	10	0.08	38
Procurement Clerk.	10	0.06	14
Secretary.	310	2.12	16
Statistical Clerk.	10	0.07	22
Switchboard Operator/Reception . .	40	0.[illegible]	32
Typist	230	1.58	27
Customer Service Representative Printing & Publishing	60	0.40	12
All Other Office Clerical.	150	1.02	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Production Clerk/Coordinator.	70	0.49	41
Shipping Packer	80	0.52	34
Shipping/Receiving Clerk	240	1.65	19
Stock Clerk, Stockroom.	40	0.25	31
All Other Plant Clerical	30	0.20	N/A
Sales Occupations.	520	3.54	N/A
Sales Representative.	490	3.37	15
Sales Clerk	20	0.15	N/A
TOTALS	14,680	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

DRUGS

SIC 283

This group includes establishments primarily engaged in manufacturing, fabricating or processing medicinal chemicals and pharmaceutical products. Employment in this industry has increased by more than 20 percent since our last survey in 1977.

Three major occupational groups share nearly the same percentage of employment (twenty percent): professional, technical and maintenance and production.

Chemists, with employment of 260, account for 47 percent of the workers in the professional category. With the exception of the catch-all occupation, all other professional workers, with a count of 100, no other single occupation has a significant share of employment. Scientific occupations account for more than 90 percent of the technical workers.

Within the maintenance and production category the only occupation with significant employment is inspectors (140), with nearly 25 percent of employment. The all other skilled, semi skilled and laborers groups account for one third of employment in this category.

Sales workers account for only 6.4 percent of employment, a much smaller share than the approximate 10 percent share nationally.

OCCUPATIONS OF EMPLOYEES
DRUGS (SIC 283)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	290	10.86	3
Professional Occupations	550	20.60	N/A
Chemical Engineer.	20	0.89	42
Electrical & Electronic Engineer .	10	0.33	4
Mechanical Engineer.	30	0.92	9
All Other Engineers	10	0.52	N/A
Chemist	260	9.45	17
Biological Scientist	20	0.70	27
Medical Scientist	10	0.22	37
All Other Natural and Mathematical Scientists	10	0.30	N/A
Systems Analyst, EDP	20	0.55	7
Purchasing Agent/Buyer	10	0.37	10
Accountants/Auditors	20	0.81	11
Writer/Editor.	10	0.18	13
Personnel & Labor Relations Specialists	10	0.48	7
Designer	10	0.25	5
All Other Professional Workers . .	100	3.85	N/A
Technical Occupations	540	20.22	N/A
Computer Programmer	20	0.81	10
Drafter	10	0.44	3
Electrical & Electronic Technician.	10	0.40	N/A
All Other Engineering Technicians.	10	0.51	N/A
Biological Science Technician. . .	30	1.18	16
All Other Scientific Technicians .	460	16.91	N/A
Service Occupations	100	3.75	N/A
Janitors, Porters & Cleaners . . .	60	2.33	9
Guards & Doorkeepers	20	0.55	6
Food Service Workers	10	0.22	37
All Other Service Workers.	10	0.22	N/A
Maintenance & Production Occupation.	570	21.35	N/A
Mechanic, Maintenance.	30	0.96	9
Refrigeration/Air Conditioning Mechanic.	10	0.18	6

OCCUPATION	EMPLOYMENT Number	Percent	Relative Error Percent
Truck Driver	20	0.70	3
Carpenter	20	0.66	5
Electrician	10	0.44	11
Inspector	140	5.15	26
Machinist	20	0.59	4
Plumber/Pipefitter	10	0.22	11
Production Packager	70	2.44	54
Ampule Filling, Sealing/Washing Machine Operators	10	0.40	40
Chemical Operator B.	10	0.18	80
Chemical Operator, Helper	10	0.22	67
Coater, Pill	10	0.25	59
Calender Operator, Plastic	10	0.29	65
All Other Skilled Craft and Kindred Workers	20	0.81	N/A
All Other Semiskilled Craft and Kindred Workers	50	1.81	N/A
All Other Laborers	120	8.04	N/A
Clerical Occupations	450	16.85	N/A
Computer Operator	10	0.22	16
Keypunch Operator	10	0.44	N/A
All Other Office Machine Operators	10	0.30	N/A
Accounting Clerk	30	1.07	6
Bookkeeper, Hand	10	0.18	51
General Clerk Office	10	0.40	34
Order Clerk	10	0.33	18
Payroll/Timekeeping Clerk	10	0.18	19
Personnel Clerk	10	0.29	12
Procurement Clerk	10	0.25	9
Secretary	90	3.26	9
Switchboard Operator/Receptionist	10	0.44	19
Typist	30	0.92	18
Clerical Supervisor	10	0.51	11
All Other Office Clerical	50	1.85	N/A
Production Clerk/Coordinator	10	0.44	5
Shipping Packer	50	1.81	28
Shipping/Receiving Clerk	30	0.92	27
Stock Clerk, Stockroom	20	0.74	5
All Other Plant Clerical	30	1.03	N/A
Sales Occupations	170	6.37	N/A
Sales Representative	170	6.41	19
TOTALS	2,670	100.00	N/A

N/A Relative Error Not Available
Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
SOAP, CLEANERS, AND TOILET GOODS (SIC 284)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	330	11.96	7
Professional Occupations	180	6.52	N/A
Industrial Engineer	30	0.94	25
Mechanical Engineer	20	0.83	45
Safety Engineer	10	0.21	11
All Other Engineers	10	0.47	N/A
Chemist	30	1.23	28
Purchasing Agent&/ or Buyer	10	0.36	43
Accountants and Auditors	30	0.98	16
Nurse, Professional	10	0.21	11
Personnel & Labor Relations Specialist	10	0.29	24
All Other Professional Workers	20	0.72	N/A
Technical Occupations	50	1.81	N/A
Computer Programmer	20	0.65	36
Drafter	10	0.21	36
All Other Science Technicians	20	0.72	N/A
Service Occupations	60	2.17	N/A
Janitors, Porters, & Cleaners	20	0.76	44
Guards & Doorkeepers	30	0.91	5
All Other Service Workers	10	0.36	N/A
Maintenance and Production Occupations	1,530	55.43	N/A
Mechanic, Maintenance	40	1.31	35
All Other Mechanics and Repairers	30	1.13	N/A
Truck Driver	40	1.38	29
Electrician	30	0.91	20
Supervisor, Nonworking	40	1.49	43
Industrial Truck Operator	100	3.75	23
Inspector	30	1.05	27
Loader, Tank, Car/or Truck	10	0.40	41
Maintenance Repairer, General Utility	20	0.87	28
Helper, Trades	10	0.18	23
Order Filler	30	1.20	28
Plumber &/or Pipefitter	10	0.25	13
Production Packager	390	14.17	7
Stationary Boiler Firer	20	0.61	18
Chemical Operator Helper	20	0.54	22
Tester	10	0.18	48

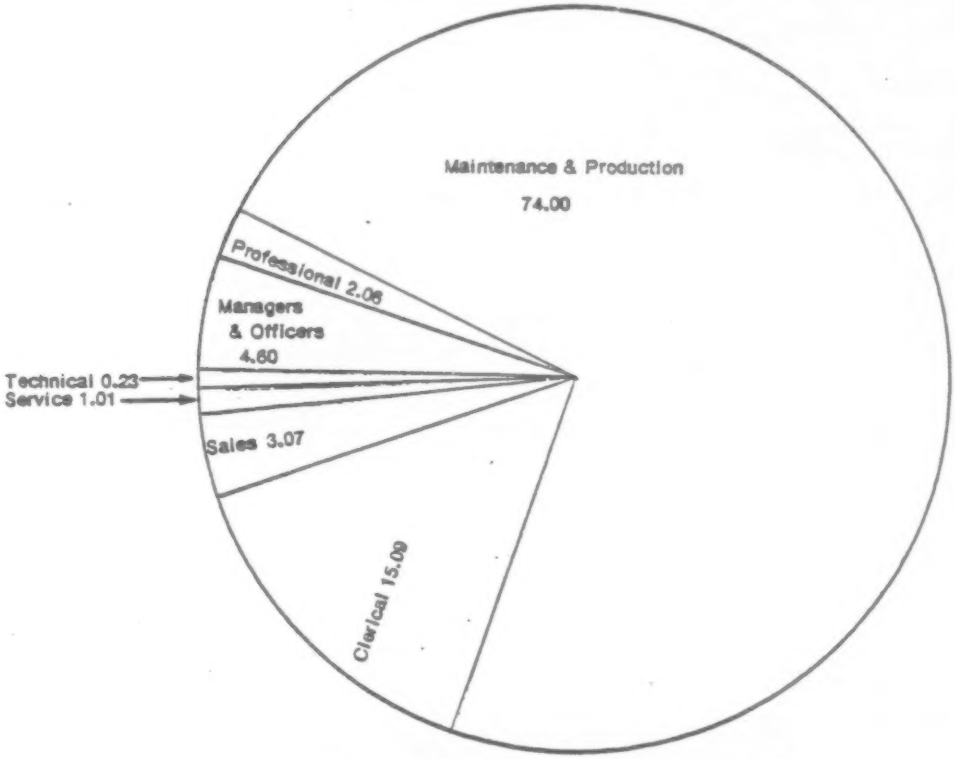
SIC 284 (con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Weigher, Production	20	0.58	25
Mixer/Blender, Chemical	60	2.04	24
All Other Skilled Workers . . .	140	5.07	N/A
All Other Semiskilled Workers .	230	8.33	N/A
All Other Laborers	250	9.06	N/A
Clerical Occupations	510	18.48	N/A
Computer Operator	10	0.36	23
Keypunch Operator	10	0.51	32
All Other Office Machine Operators	10	0.25	N/A
Accounting Clerk	70	2.73	26
Bookkeeper, Hand	20	0.58	50
General Clerk, Office	50	2.00	16
Order Clerk	30	0.94	27
Payroll/Timekeeping Clerk	10	0.29	24
Procurement Clerk	10	0.18	15
Secretary	100	3.86	34
Statistical Clerk	10	0.18	23
Switchboard Operator/Receptionist	10	0.21	11
Typist	30	0.94	27
Clerical Supervisor	10	0.32	25
All Other Office Clerical Workers	10	0.36	N/A
Production Clerk/Coordinator . .	20	0.72	25
Shipping Packer	30	0.94	39
Shipping/Receiving Clerk	50	1.96	19
Stock Clerk, Stockroom	20	0.72	20
Sales Occupations	100	3.62	N/A
Sales Representatives	100	3.62	23
TOTAL	2,760	100.00	-

N/A Relative Error Not Available
Note: May not add to totals due to rounding.

LEATHER AND LEATHER PRODUCTS (SIC 31)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	All Other Laborers and Unskilled Workers	2,060
2.	Sewing Machine Operator, Reg. Equip. Nongarment	1,230
3.	Stitcher, Standard Machine	1,080
4.	Managers and Officers	1,000
5.	Die Cutter	910
6.	Assembler	860
7.	All Other Semiskilled Workers	810
8.	Sales Representative	610
9.	Floor Worker, Footwear	550
10.	Shipping Packer	500

These 10 occupational categories make up 44% of total industry employment.

SIC

31

This major group includes establishments engaged in tanning, currying and finishing hides and skins, and establishments manufacturing finished leather and artificial leather products. Products include footwear (excluding rubber) and footwear components, leather gloves, mittens, luggage, handbags and other leather goods. The leather industry has been a major component of the nondurable goods sector in Massachusetts, but employment in this industry has declined as foreign imports have increased their penetration in this country.

The major industry is footwear (SIC 314), employing 12,300 workers, 60 percent of total leather products employment. The second major industry is boot and shoe cut findings (SIC 313). There has been a steady shift in these industries to adjust to the threat of imports. Unable to compete with the cost of manufacturing, firms have begun to manufacture their own stock overseas or import some or all of the component parts and assemble these components here. This has resulted in a shift away from manufacturing, to a greater emphasis on marketing.

There were 2,000 less workers reported in the leather and leather products group than during the 1977 survey period. The decline in employment has occurred within the production and maintenance occupations where there are 2400 less.workers than in 1977. Still, nearly three out of four workers are employed in these occupations. Most production and maintenance occupations show decreases; this is more reflective of a drop in the number of establishments or an overall decline in output, rather than technological changes causing shifts in certain occupations or product changes that would affect production functions.

Sales representatives increased 200 - up 50 percent from the 1977 survey. This could be due to the shift to marketing (foreign made as well as domestic), generating sales from sources other than their diminishing domestic output. This could account for the increase in production clerks (150) and shipping packers (130).

Clerical occupations increased by 470, the largest rise of any category. The increases occuring in such occupations as computer operator (30), keypunch operator (50), and accounting clerk (70), however, were relatively small.

Among professional occupations, designers increased by 40 workers. All other professional categories remained the same.

OCCUPATIONS OF EMPLOYEES
LEATHER AND LEATHER PRODUCTS (SIC 31)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	1,000	4.60	3
Professional Occupations	450	2.06	N/A
Industrial Engineer	50	0.20	6
Mechanical Engineer	10	0.03	19
All Other Engineers	10	0.04	N/A
Systems Analysts, EDP	20	0.09	10
Purchasing Ageny/Buyer	100	0.45	4
Accountants & Auditors	130	0.58	5
Personnel/Labor Relations Specialists	40	0.17	6
Designer	80	0.35	6
All Other Professional Workers	10	0.04	N/A
Technical Occupations	50	0.23	N/A
Computer Programmer	30	0.13	9
Engineering Technician	20	0.07	11
Service Occupations	220	1.01	N/A
Janitors, Porters & Cleaners	140	0.64	3
Guards & Doorkeepers	30	0.13	9
Supervisors, Nonworking, Service	40	0.18	14
All Other Service Workers	10	0.04	N/A
Maintenance & Production Occupation	16,130	74.00	N/A
Mechanic, Maintenance	70	0.32	8
All Other Mechanics & Repairer	10	0.05	N/A
Presser, Machine	30	0.11	13
Truck Driver	40	0.17	5
Carpenter	10	0.05	10
Electrician	10	0.05	8
Supervisor, Nonworking	470	2.16	4
Industrial Truck Operator	40	0.17	5
Inspector	290	1.32	5
Machinist	30	0.11	7
Maintenance, Repairer, General Utility	110	0.51	5
Helper, Trades	20	0.08	10
Order Filler	100	0.47	11
Painter, Maintenance	10	0.02	21

SIC 31 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Production Packager	420	1.91	12
Sewing-Machine Operator, Regular Equipment, Nongarment	1,230	5.66	5
Sewing-Machine Operator, Special and/or Automatic -Nongarment	220	1.02	8
Stationary Boiler, Firer	10	0.03	9
Skiver	360	1.67	10
Welders & Flamecutters	10	0.02	20
Trimmer, Machine	420	1.92	9
Assembler for Puller-Over Hand or Machine	160	0.72	5
Bed Laster	80	0.36	7
Bottom Filler	40	0.19	6
Buffer, Hides/Skin	80	0.37	6
Buffer, Shoe Parts	100	0.46	4
Burnisher	30	0.13	8
Case Maker	80	0.34	20
Cementer, Machine Joiner	160	0.74	8
Perforator Operator	60	0.27	7
Cobbler	60	0.29	6
Die Cutter	910	4.20	4
Flamer	20	0.11	5
Floor Worker, Footwear	550	2.54	4
Folder, Machine	40	0.18	7
Glue-Spreading Machine Operator	40	0.17	23
Heel Attacher	70	0.31	5
Heel Builder, Hand/Machine	40	0.16	27
Heel-Seat Laster, Machine	90	0.40	4
Heel Seat Fitter, Machine	50	0.20	8
Inker, Hand/Machine	40	0.16	7
Laster, Hand	110	0.49	7
Lasting-Machine Operator	50	0.21	12
Belt-Maker, Apparel	10	0.03	15
Leather Stamper, Hand	10	0.02	9
Leather Worker	100	0.46	18
Limer	10	0.02	14
Tanning-Liquor Maker	20	0.10	11
Luggage Maker	30	0.12	19
Measuring-Machine Operator, Leather	50	0.22	7
Patternmaker	50	0.21	8
Puller-Over	30	0.11	10
Repairer, Finish	180	0.82	5
Rough Rounder, Machine	130	0.60	12
Seam-Rubbing Machine Operator	40	0.16	7
Seasoner, Machine	20	0.11	10

SIC 31 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Shoe Parts, Sewer, Hand.	50	0.23	15
Shank-Piece Tacker	40	0.17	5
Side Laster.	70	0.32	5
Sole Leveler Machine	70	0.29	12
Sorter, Leather.	160	0.74	4
Splitting-Machine Feeder	110	0.51	7
Sprayer Hand/Machine	100	0.44	4
Stainer	120	0.57	15
Staker, Machine.	30	0.11	9
Stitcher Special Machine	70	0.33	7
Stitcher, Standard Machine	1,080	4.96	4
Stitcher, Utility	380	1.75	7
Tacker, Toggler/Paster	200	0.93	4
Tanning Drum Operator	90	0.42	4
Tester	10	0.02	20
Thermalasting-Machine Operator . .	10	0.04	13
Toe Laster	40	0.18	8
Treer	150	0.67	5
Vulcanizer, Footwear	20	0.10	17
Wringer-Machine Operator	50	0.23	8
Riveter, Light	90	0.41	8
Compression/Injection-Molding Machine Operator, Plastics . . .	220	1.02	23
Conveyor Operator/Tender	30	0.12	7
Vamp Creaser	30	0.12	9
Splitter, Machine	90	0.42	5
Fastener, Machine	140	0.62	6
Cementer, Paster, Backer/Backer. .	330	1.52	7
Eyelet-Machine Operator	80	0.38	10
Molder, Shoe Parts	110	0.48	10
Pulling & Lasting Machine	80	0.35	5
Cutter, Hand	250	1.12	6
Gluer/Cementer, Hand	180	0.84	8
Instructor, Leather/Footwear Machiner.	20	0.09	10
Handbag Framer	20	0.11	16
Embossing, Stamping/Marking Machine Operator.	290	1.33	6
Assembler	860	3.95	6
Beamer, Hand or Machine	20	0.07	7
All Other Skilled Craft and Kindred Workers	120	0.55	N/A
All Other Semiskilled Craft and Kindred Workers	810	3.70	N/A
All Other Laborers	2,060	9.49	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Clerical Occupations.	3,290	15.09	N/A
Bookkeeping/Billing Machine Operator.	40	0.18	7
Computer Operator	70	0.33	5
Keypunch Operator	160	0.72	11
All Other Office Machine Operators. .	40	0.19	N/A
Stenographer	30	0.13	12
Accounting Clerk	220	0.99	7
Bookkeeper, Hand	160	0.75	4
File Clerk	50	0.22	6
General Clerk Office	300	1.37	4
Order Clerk	160	0.72	7
Payroll/Timekpeeing Clerk	150	0.66	2
Personnel Clerk	30	0.12	6
Procurement Clerk	30	0.15	7
Receptionist	10	0.04	16
Secretary	160	0.71	5
Statistical Clerk	10	0.04	14
Switchboard Operator	10	0.05	9
Switchboard Operator/Receptionist . .	60	0.29	4
Typist.	90	0.42	9
Clerical Supervisor	230	1.07	6
All Other Office Clerical Workers . .	190	0.85	13
Production Clerk/Coordinator.	90	0.43	10
Shipping Packer	500	2.30	7
Shipping/Receiving Clerk.	240	1.11	4
Weigher, Record-Keeping	10	0.04	14
Stock Clerk, Stockroom	190	0.86	7
All Other Plant Clerical Workers. . .	60	0.26	N/A
Sales Occupations	670	3.07	N/A
Sales Representative.	610	2.81	6
Sales Clerk	60	0.29	8
TOTAL	21,800	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
LEATHER TANNING AND FINISHING (SIC 311)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	140	5.34	7
Professional Occupations	30	1.15	N/A
Purchasing Agent/Buyer	10	0.27	27
Accountants and Auditors	10	0.55	23
Personnel & Labor Relations Specialists	10	0.23	29
Technical Occupations	10	0.38	N/A
Engineering Technician	10	0.51	34
Service Occupations.	50	1.91	N/A
Janitors, Porters & Cleaners . . .	20	0.59	23
Supervisors, Nonworking Service. .	30	1.30	50
Maintenance & Production Occupations	2,100	81.15	N/A
Mechanic, Maintenance.	20	0.94	28
Truck Driver	10	0.35	35
Supervisor, Nonworking	70	2.83	20
Industrial Truck Operator.	30	1.14	18
Inspector.	20	0.59	28
Maintenance, Repairer, General Utility	20	0.70	27
Painter, Maintenance	10	0.19	66
Sewing-Machine Operator, Regular Equipment - Nongarment.	20	0.67	32
Skiver	10	0.43	43
Trimmers, Machine	50	2.12	31
Buffer, Hides/Skin	80	3.23	21
Floor Worker, Footwear	70	2.76	27
Limer	10	0.19	46
Tanning-Liquor Maker	20	0.86	35
Measuring-Machine Operator, Lathe.	50	1.93	22
Seasoner, Machine.	20	0.82	34
Sorter, Leather	90	3.50	11
Splitting-Machine Feeder	110	4.25	22
Sprayer Hand/Machine	40	1.49	18
Staker, Machine	30	1.02	28
Tacker, Toggler and Paster	200	8.04	11
Tanning Drum Operator.	90	3.66	13

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Wringer-Machine Operator.	50	2.05	26
Splitter, Machine	20	0.86	30
Cementer, Paster, Backer/Fitter .	10	0.55	33
Cutter, Hand.	50	1.93	30
Gluer/Cementer, Hand.	20	0.82	40
Embossing, Stamping/Marking Machine Operator	100	3.78	17
Assembler	10	0.23	34
Beamer, Hand/Machine.	20	0.63	24
All Other Skilled Craft and Kindred Workers	20	0.79	N/A
All Other Semiskilled Craft and Kindred Workers	360	14.36	N/A
All Other Laborers.	370	14.64	N/A
Clerical Occupations.	260	9.90	N/A
Accounting Clerk.	10	0.51	23
Bookkeeper, Hand.	50	1.97	9
General Clerk, Office	30	1.34	16
Order Clerk	10	0.19	37
Payroll/Timekeeping Clerk	10	0.47	15
Secretary	10	0.51	24
Clerical Supervisor	10	0.47	49
All Other Office Clerical	20	0.63	N/A
Shipping Packer	60	2.44	15
Shipping/Receiving Clerk.	40	1.53	13
All Other Plant Clerical.	10	0.39	N/A
Sales Occupations	30	1.14	N/A
Sales Representative.	30	1.06	15
TOTALS	2,620	100.00	N/A

N/A Relative Error Not Available

Note; May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
FOOTWEAR, EXCEPT RUBBER (SIC 314)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	520	4.10	12
Professional Occupations	250	1.97	N/A
Industrial Engineer	30	0.26	20
Systems Analyst, EDP	20	0.14	32
Purchasing Agent/Buyer	60	0.46	10
Accountants/Auditors	70	0.55	21
Personnel & Labor Relations Specialists	20	0.15	22
Designer	40	0.29	18
All Other Professional Workers	10	0.09	N/A
Technical Occupations	20	0.16	N/A
Computer Programmer	20	0.16	32
Service Occupations	120	0.95	N/A
Janitors, Porters & Cleaners	90	0.70	12
Guards & Doorkeepers	20	0.15	38
All Other Service Workers	10	0.07	N/A
Maintenance & Production Occupations	9,250	72.89	N/A
Mechanic, Maintenance	20	0.14	31
All Other Mechanics & Repairers	10	0.08	N/A
Truck Driver	30	0.19	21
Carpenter	10	0.03	31
Electrician	10	0.06	28
Supervisor, Nonworking	270	2.14	11
Industrial Truck Operator	10	0.06	35
Inspector	210	1.64	11
Machinist	20	0.17	23
Maintenance Repairer, General Utilities	70	0.52	13
Helper Trades	10	0.08	29
Order Filler	70	0.56	23
Production Packager	170	1.32	16
Sewing Machine Operator, Regular Equipment - Non-Garment	640	5.04	24
Sewing Machine Operator, Special Equipment - Non-Garment	170	1.34	27
Stationary Boiler/Firer	10	0.03	42
Skiver	90	0.73	15
Trimmer, Machine	150	1.17	17

SIC 314 (cont.)

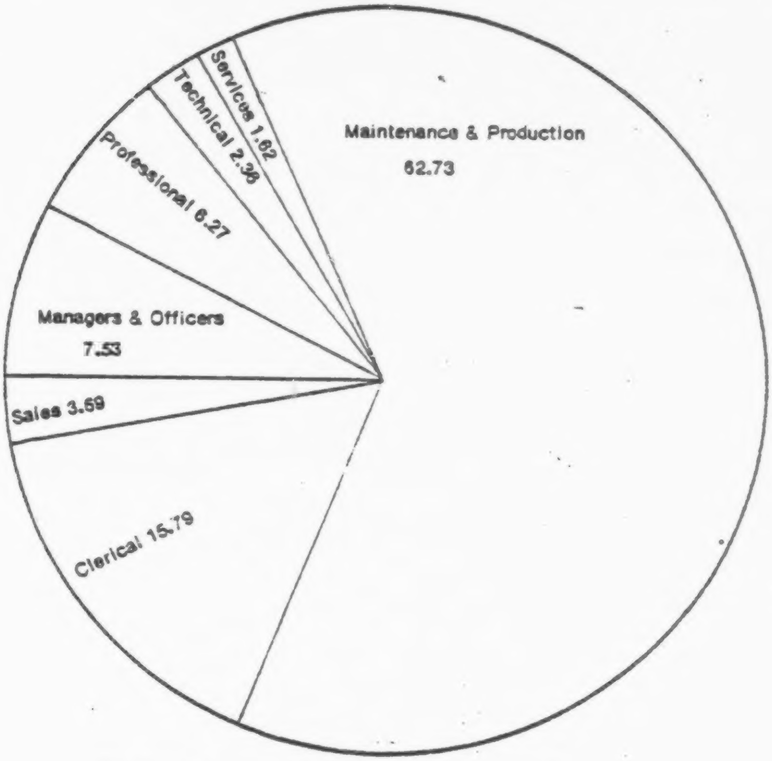
OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Assembler for Puller-Over, Hand or Machine	160	1.22	15
Bed Laster	80	0.62	21
Bottom Filler	40	0.33	19
Buffer, Shoe Parts	100	0.76	14
Burnisher	20	0.18	22
Case Maker	10	0.06	50
Cementer Machine Joiner	150	1.14	20
Perforator Operator	50	0.40	24
Cobbler	60	0.50	18
Die Cutter	360	2.81	12
Flamer	20	0.18	16
Floor Worker, Footwear	400	3.14	17
Folder, Machine	40	0.32	23
Heel Attacher	70	0.53	16
Heel-Seat Laster, Machine	90	0.68	13
Heel-Seat Fitter, Machine	40	0.33	24
Inker, Hand or Machine	30	0.23	21
Laster, Hand	110	0.85	23
Lasting-Machine Operator	50	0.37	38
Patternmaker	40	0.29	23
Puller- Over	30	0.20	32
Repairer, Finish	180	1.38	16
Rough Rounder, Machine	60	0.45	16
Seam-Rubbing Machine Operator	40	0.28	22
Shoe Parts Sewer, Hand	40	0.30	49
Shank-Piece Tacker	40	0.29	16
Side Laster	70	0.55	15
Sole Leveler, Machine	60	0.48	39
Sorter, Leather	40	0.32	22
Sprayer, Hand/Machine	60	0.46	15
Stainer	20	0.13	40
Stitcher, Special Machine	70	0.53	24
Stitcher, Standard Machine	990	7.76	14
Stitcher, Utility	330	2.60	23
Thermalasting-Machine Operator	10	0.07	44
Toe Laster	40	0.31	25
Treer	150	1.14	16
Riveter, Light	10	0.08	31
Conveyor Operator/Tender	30	0.22	23
Vamp Creaser	30	0.21	30
Splitter, Machine	60	0.43	18
Fastener, Machine	120	0.92	17
Cementer, Paster, Backer or Fitter Hand	210	1.63	17
Eyelet-Machine Operator	50	0.36	13
Molder, Shoe Parts	70	0.57	24
Pulling & Lasting Machine Operator	80	0.59	17
Cutter, Hand	160	1.26	23

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Gluer/Cementer, Hand.	40	0.29	32
Instructor, Leather/Footwear Machinery	10	0.11	32
Embossing,Stamping Machine Operator	90	0.73	14
Assembler	380	2.98	27
All Other Skilled Craft and Kindred Workers	110	0.87	N/A
All Other Semiskilled Craft and Kindred Workers	380	2.97	N/A
All Other Laborers.	1,370	10.78	N/A
Clerical Occupations.	2,140	16.86	N/A
Bookkeeping Machine Operator . . .	30	0.19	23
Computer Operator	60	0.47	18
Keypunch Operator	140	1.13	38
All Other Office Machine Operators.	40	0.31	N/A
Stenographer.	30	0.19	34
Accounting Clerk.	180	1.37	25
Bookkeeper, Hand	50	0.36	20
File Clerk	40	0.29	19
General Clerk, Office	170	1.36	18
Order Clerk	130	1.02	24
Payroll/Timekeeping Clerk	120	0.91	9
Personnel Clerk	20	0.13	20
Procurement Clerk	30	0.23	23
Secretary	80	0.62	20
Statistical Clerk	10	0.06	49
Switchboard Operator	10	0.04	42
Switchboard Operator/Receptionist .	40	0.32	10
Typist.	70	0.58	31
Clerical Supervisor	150	1.19	26
All Other Office Clerical	180	1.40	N/A
Production Clerk/Coordinator. . . .	40	0.29	19
Shipping Packer	210	1.66	27
Shipping/Receiving Clerk.	140	1.10	17
Stock Clerk, Stockroom.	150	1.18	25
All Other Plant Clerical.	50	0.37	N/A
Sales Occupations	390	3.07	N/A
Sales Representative.	350	2.75	19
Sales Clerk	40	0.33	31
TOTALS	12,690	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

STONE, CLAY, GLASS AND CONCRETE PRODUCTS (SIC 32)



DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY

Ranked Occupational Employment

1.	Managers and Officers	1,020
2.	All Other Semiskilled Workers	860
3.	Truck Driver	780
4.	All Other Laborers and Unskilled Workers	770
5.	Sales Representative	490
6.	Press Operator	480
7.	Supervisor, Nonworking	390
8.	All Other Engineers	370
9.	Abrasive Grinder	310
10.	Selector, Glassware	280

These 10 occupational categories make up 42% of total industry employment.

SIC

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This major group includes establishments engaged in manufacturing flatglass and other glass products, cement, structural clay products, pottery, concrete, cut stone and other similar products. Since 1977 employment has increased by more than 15 percent. The diversity of the 10 three digit industries in this group is best demonstrated by the more than 130 publishable occupations. SIC 329, abrasive, asbestos, and miscellaneous nonmetallic mineral products dominates the group with employment of 8400 (60 percent). Approximately 70 percent of the nearly 300 establishments in the group employ less than 20 persons and four establishments employ over 250 workers.

Maintenance and production occupations account for 62 percent of employment. Of the 86 occupations in this group, 14 account for more than 60 percent of employment. The largest of these occupations are: truck drivers (780) non-working supervisors (390) press operators (480) glassware selectors (280) all other semiskilled (860) and laborers (770).

Managers and officers represent a relatively high percentage of employment (7.5), a one to thirteen ratio.

OCCUPATIONS OF EMPLOYEES
STONE, CLAY, AND GLASS PRODUCTS (SIC 32)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	1,020	7.53	2
Professional Occupations	850	6.27	N/A
Civil Engineer	10	0.06	21
Industrial Engineer	20	0.17	13
Mechanical Engineer	20	0.17	34
Ceramic Engineer	10	0.03	20
All Other Engineers	370	2.73	8
Chemist	10	0.04	35
Systems Analyst, Electronic Data Processing	40	0.26	7
Purchasing Agent/Buyer	30	0.19	9
Accountants/Auditors	110	0.81	3
Nurse, Professional	10	0.06	4
Personnel & Labor Relations Specialist	40	0.31	5
Designer	10	0.08	11
All Other Professional Workers	170	1.22	N/A
Technical Occupations	320	2.36	N/A
Computer Programmer	20	0.17	7
Drafter	50	0.36	7
Mechanical Engineering Technician	110	0.77	6
Industrial Engineering Technician	40	0.28	6
All Other Engineering Technicians	30	0.25	8
Science Technician	20	0.14	35
All Other Technicians	50	0.36	N/A
Service Occupations	220	1.62	N/A
Janitors, Porters, and Cleaners	170	1.25	5
Guards and Doorkeepers	20	0.15	10
Supervisor, Nonworking Service	20	0.12	6
All Other Service Workers	10	0.07	N/A
Maintenance & Production Occupations	8,500	62.73	N/A
Mechanic Automotive	200	1.50	3
Engineering Equipment Mechanic	30	0.20	3
Mechanic, Maintenance	150	1.09	5
All Other Mechanics & Repairers	20	0.13	11
Truck Driver	780	5.73	4
Carpenter	60	0.42	7
Concrete Rubber	70	0.53	4
Crane, Derrick, & Hoist Operator	20	0.17	8
Delivery and Route Worker	110	0.83	10
Driller, Machine	10	0.07	28

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Electrician	70	0.53	4
Supervisor, Nonworking	390	2.90	2
Heavy Equipment Operator	50	0.39	7
Industrial Truck Operator	210	1.57	3
Inspector	210	1.56	2
Machinist	50	0.35	8
Maintenance Repairer, General Utility	200	1.47	8
Oiler	10	0.08	0
Order Filler	100	0.73	13
Painter, Maintenance	10	0.04	7
Pipe Stripper	10	0.09	17
Plumber/Pipefitter	30	0.20	4
Production Packager	30	0.18	26
Sheet Metal Worker	40	0.31	8
Stationary Engineer	20	0.14	21
Welders and Flamecutters	80	0.62	4
Abrasive Grinder	310	2.32	7
Beveler	10	0.10	7
Blockmaking Machine Operator	30	0.19	17
Brick & Tile Machine Operator	30	0.21	5
Cage Maker	20	0.17	5
Caster, Pottery & Porcelain	20	0.11	11
Concrete-Pipe Maker	90	0.68	11
Concrete-Stone Fabricator	250	1.84	5
Concrete-Stone Finisher	50	0.33	4
Decal Applier	20	0.15	8
Drill-Press Operator	10	0.10	8
Finisher, Pottery & Porcelain	50	0.36	4
Forming-Machine Operator, Glass	60	0.42	3
Forming-Machine Maintainer, Glass	20	0.17	3
Gatherer	20	0.17	35
Glass-Cut-Off Machine Operator	10	0.10	9
Glass Cutter, Machine	10	0.05	27
Glass Grinder	50	0.34	9
Glazier, Stained Glass	50	0.39	15
Grinding Machine Operator, Metal	220	1.62	29
Hand Edger, Belt Seamer	20	0.15	25
Lathe Operator, Grinding Wheels	50	0.35	5
Lathe Machine Operator, Metal	40	0.26	7
Machine Tool Operator, Combination	10	0.10	8
Machine Tool Setter, Metal	10	0.10	8
Molding-Machine Operator/Presser	30	0.19	42
Patternmaker, Stone Cutting	20	0.12	15
Planer, Stone	10	0.03	27
Polisher, Mold	10	0.10	3
Power-Press Tender	10	0.09	17
Sandblaster, Stone	110	0.78	4

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Sawyer, Stone	10	0.10	12
Screener Operator	80	0.60	7
Second Cutter, Hand	20	0.13	12
Selector, Glassware	280	2.07	3
Setter/Drawer	190	1.38	6
Splitter	10	0.07	28
Stone Carver, Hand	10	0.07	14
Stone Cutter, Hand	20	0.17	10
Stone Cutter, Machine	10	0.03	23
Stone Polisher	10	0.07	18
Tester	40	0.30	4
Press Operator	480	3.55	6
Painter Production	20	0.17	8
Conveyor Operator/Tender	60	0.45	10
Mixer, Stone, Clay, and Glass	180	1.35	4
Concrete-Vault Maker	40	0.30	19
Floor Worker, Glass	40	0.25	3
Mill/Grinder Operator, Minerals	220	1.64	25
Screen/Stencil Printer/Setter	10	0.05	24
Assembler	90	0.64	13
Decorator, Hand	80	0.60	10
Model/Mold Maker	70	0.51	4
Furnace, Kiln, Drier, or Oven Operator/Tender	120	0.86	4
Batch Plant Operator	80	0.59	4
Clay Maker	10	0.05	N/A
Miller, Clay	10	0.06	N/A
All Other Skilled Craft & Kindred Workers	70	0.51	N/A
All Other Semiskilled Workers	860	6.34	N/A
All Other Laborers	770	5.68	N/A
Clerical Occupations	2,140	15.79	N/A
Computer Operator	20	0.11	4
Keypunch Operator	120	0.90	7
Stenographers	30	0.18	7
Accounting Clerk	80	0.60	5
Bookkeeper, Hand	140	1.04	6
File Clerk	80	0.58	7
General Clerk, Office	280	2.04	3
Order Clerk	60	0.47	2
Payroll/Timekeeping Clerk	160	1.19	6
Personnel Clerk	10	0.07	13
Procurement Clerk	10	0.05	28
Secretary	270	2.01	2
Statistical Clerk	20	0.14	6

OCCUPATION	EMPLOYMENT Number	Percent	Relative Error Percent
Switchboard Operator	10	0.04	7
Switchboard Operator/Receptionist	10	0.08	15
Typist	30	0.23	4
Clerical Supervisor	140	1.01	5
All Other Office Clerical Workers	210	1.54	8
Production Clerk/Coordinator	160	1.14	5
Shipping Packer	150	1.09	6
Shipping/Receiving Clerk	50	0.35	9
Weigher, Recordkeeping	10	0.07	35
Stock Clerk, Stockroom	30	0.19	3
Dispatcher, Vehicle, Service or Work	50	0.35	7
All Other Plant Clerical Workers	10	0.08	4
Sales Occupations	500	3.69	N/A
Sales Representative	490	3.64	6
Sales Clerk	10	0.06	29
TOTAL	13,550	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
CONCRETE, GYPSUM, AND PLASTER PRODUCTS (SIC 327)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	280	9.33	8
Professional Occupations	60	2.00	N/A
Industrial Engineer	10	0.36	34
All Other Engineers	20	0.57	N/A
Purchasing Agent/Buyer	10	0.23	5
Accountants and Auditors	20	0.73	28
All Other Professional Workers . .	10	0.17	N/A
Technical Occupations	20	0.67	N/A
Drafter	20	0.67	15
Service Occupations	20	0.67	N/A
Janitors, Porters & Cleaners . .	20		22
Maintenance and Production Occupations	2,280	76.00	N/A
Mechanic, Automotive	150	4.85	13
Engineering-Equipment Mechanic .	30	0.93	9
Mechanic, Maintenance	30	0.93	38
All Other Mechanics and Repairers.	20	0.60	N/A
Truck Driver	710	23.59	12
Carpenter	30	0.93	43
Concrete Rubber	70	2.40	12
Delivery & Route Worker	100	3.21	37
Supervisor, Nonworking	40	1.20	26
Heavy Equipment Operator	30	1.07	36
Industrial Truck Operator	70	2.37	25
Inspector	20	0.53	11
Maintenance Repairer, General Utility	60	2.00	23
Order Filler	70	2.37	43
Plumber/Pipefitter	10	0.20	11
Welders/Flamecutters	40	1.17	18
Cage Maker	20	0.76	16
Concrete Pipe Maker	90	3.11	34
Concrete-Stone Fabricator	250	8.33	15
Concrete-Stone Finisher	50	1.50	11
Sandblaster,Stone	60	1.90	11
Conveyor Operator/Tender	40	1.33	46
Model/Mold Maker	40	1.23	21
Batch Plant Operator	70	2.30	16
All Other Skilled Workers	50	1.70	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
All Other Semiskilled Workers . .	30	1.04	N/A
All Other Laborers	140	4.54	N/A
Clerical Occupations	280	9.33	N/A
Accounting Clerk	20	0.76	39
Bookkeeper, Hand	80	2.57	19
General Clerk, Office	60	2.04	22
Order Clerk	10	0.20	11
Payroll/Timekeeping Clerk	10	0.26	N/A
Secretary	20	0.60	17
Typist	10	0.30	11
All Other Office Clerical Workers	20	0.60	N/A
Production Clerk/Coordinator . .	10	0.20	5
Dispatcher, Vehicle, Service Worker	50	1.50	22
All Other Plant Clerical	10	0.33	N/A
Sales Occupations	60	2.00	N/A
Sales Representatives	60	2.00	16
TOTAL	3,000	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
MISC. NONMETALLIC MINERAL PRODUCTS (SIC 329)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	580	7.12	12
Professional Occupations	750	9.20	N/A
All Other Engineers	390	4.84	N/A
Systems Analyst, EDP	30	0.41	23
Accountants/Auditors	90	1.04	12
Nurse, Professional	10	0.07	20
Personnel/Labor Relations Specialist	40	0.45	17
Designer	10	0.08	26
All Other Professional Workers .	190	2.32	N/A
Technical Occupations	290	3.56	N/A
Computer Programmer	20	0.28	22
Mechanical Engineering Technician	100	1.25	20
Industrial Engineering Technician	40	0.46	20
All Other Engineering Technicians	60	0.72	N/A
Science Technicians	20	0.23	N/A
All Other Technicians	50	0.55	N/A
Service Occupations	110	1.35	N/A
Janitors, Porters, & Cleaners .	70	0.84	4
Supervisor, Nonworking Service .	20	0.20	19
All Other Service Workers . . .	30	0.32	N/A
Maintenance and Production Occupations	4,350	53.37	N/A
Mechanic, Automotive	60	0.71	17
Mechanic, Maintenance	100	1.22	18
Truck Driver	30	0.41	26
Carpenter	30	0.36	18
Crane,Derrick,Hoist Operator . .	10	0.12	25
Electrician	50	0.63	19
Supervisor, Nonworking	290	3.61	7
Heavy Equipment Operator	10	0.17	26
Industrial Truck Operator . . .	80	1.00	14
Inspector	140	1.68	10
Machinist	50	0.58	26
Painter, Maintenance	10	0.07	24
Plumber/Pipefitter	20	0.27	17
Sheet Metal Worker	40	0.52	26
Welders and Flame Cutters . . .	40	0.45	26
Abrasive Grinder	310	3.85	22

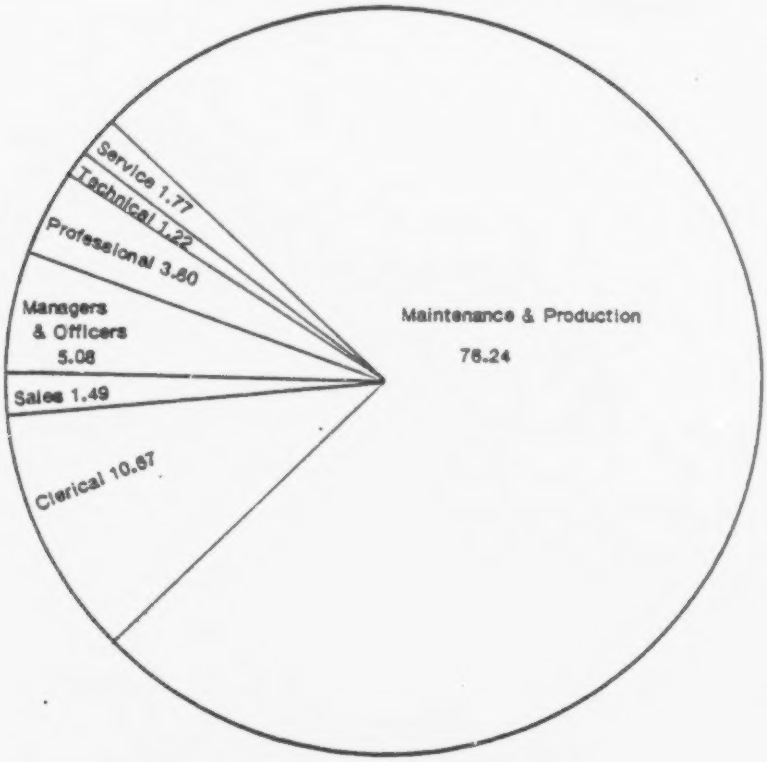
SIC 329 (con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Brick and Tile Machine Operator .	20	0.20	25
Decal Applier	20	0.25	26
Drill Press Operator	10	0.17	26
Lathe Operator, Grinding Wheels .	50	0.58	17
Lathe Machine Operator, Metal . .	40	0.44	21
Machine Tool Operator, Combination	10	0.17	26
Machine Tool Setter, Metal . . .	10	0.17	26
Screener Operator	80	1.00	23
Setter/Drawer	120	1.52	26
Tester	20	0.18	26
Press Operator	480	5.90	20
Painter,Production	20	0.28	27
Conveyor Operator/Tender	20	0.25	26
Mixer,Stone,Clay, Glass	170	2.06	12
Model and or Mold Maker	10	0.09	27
Furnace, Kiln, Drier Operator . .	90	1.05	15
All Other Skilled Workers	140	1.74	N/A
All Other Semiskilled Workers . .	1,270	15.54	N/A
All Other Laborers	490	6.00	N/A
Clerical Occupations	1,650	20.25	N/A
Computer Operator	10	0.15	16
Keypunch Operator	120	1.46	24
All Other Office Machine Operators	10	0.07	N/A
Stenographer	20	0.27	26
Accounting Clerk	50	0.62	14
File Clerk	80	0.95	22
General Clerk, Office	170	2.06	13
Order Clerk	60	0.71	6
Payroll/Timekeeping Clerk	140	1.67	24
Secretary	220	2.75	7
Statistical Clerk	20	0.23	19
Switchboard Operator	10	0.07	24
Typist	20	0.28	19
Clerical Supervisor	120	1.49	17
All Other Office Clerical Workers	243	2.98	N/A
Production Clerk/Coordinator . .	150	1.83	16
Shipping Packer	140	1.65	19
Shipping/Receiving Clerk	40	0.50	32
Stock Clerk, Stockroom	20	0.25	11
All Other Plant Clerical Workers .	20	0.23	N/A
Sales Occupations	420	5.15	N/A
Sales Representatives	420	5.15	21
TOTAL	8,150	100.00	-

N/A Relative Error Not Available
Note May not add to totals due to rounding

PRIMARY METAL INDUSTRIES (SIC 33)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	All Other Semiskilled Workers	1,690
2.	Assembler	1,680
3.	Managers and Officers	920
4.	All Other Laborers and Unskilled Workers	800
5.	Insulating Extruding Machine Operator	590
6.	All Other Skilled Workers	520
7.	Supervisor, Nonworking	500
8.	Wire Drawer	500
9.	Heat Treater, Annealer	450
10.	Fillers, Grinders, Etc.	360

These 10 occupational categories make up 45% of total industry employment.

SIC

33

This major group includes establishments engaged in the smelting and refining of ferrous and nonferrous metals from ore, pig, or scrap; in the rolling, drawing, and alloying of ferrous and nonferrous metals; in the manufacturing of castings and other basic products of ferrous and nonferrous metals; and in the manufacture of nails, spikes, and insulated wire and cable.

Employment in the primary metal industry (SIC 33) has remained fairly constant from 1977 to 1980, with employment going from 16,900 jobs in 1977 to 17,300 jobs in 1980, an increase of 2.4 percent. Employment in the primary metal industry relies heavily on the demand mandated by such industries as fabricated metals (SIC 34), electrical machinery (SIC 36) and nonelectrical machinery (SIC 35). Since the employment in these industries have been continously growing in recent years, it is expected that primary metals will also grow.

The main occupational group of primary metal workers is maintenance and production, with approximately 76 percent of all workers categorized in this occupational group. The industries within the primary metal industry also show the same high percentage of maintenance and production workers: blast furnaces, steel works, and rolling and finishing mills (SIC 331) 76 percent; iron and steel foundries (SIC 332) 81 percent; rolling, drawing, and extruding of nonferrous metals (SIC 335) 75 percent.

OCCUPATIONS OF EMPLOYEES
PRIMARY METAL INDUSTRIES (SIC 33)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	920	5.08	4
Professional Occupations	650	3.60	N/A
Chemical Engineer	10	0.07	12
Electrical and Electronic Engineers	30	0.14	10
Industrial Engineer	100	0.57	7
Mechanical Engineer	70	0.40	5
Metal Engineer	70	0.40	7
Safety Engineer	10	0.05	14
All Other Engineers	10	0.05	N/A
Chemist	20	0.12	13
Systems Analyst, EDP	40	0.21	6
Purchasing Agent/Buyer	80	0.44	3
Accountants/Auditors	110	0.60	5
Nurse, Professional	10	0.07	6
Personnel/Labor Relations Specialists	50	0.27	5
All Other Professional Workers. .	40	0.22	N/A
Technical Occupations	220	1.22	N/A
Computer Programmer	10	0.05	14
Drafter	60	0.32	5
Electrical and Electronic Technicians	40	0.19	11
Mechanical Engineer Technician. .	10	0.06	15
Tool Programmer, Numerical Control.	10	0.02	13
Industrial Engineering Technician	10	0.05	18
All Other Engineering Technician.	30	0.18	N/A
Science Technicians	30	0.18	10
All Other Technicians	20	0.13	N/A
Service Occupations	320	1.77	N/A
Janitors, Porters & Cleaners. . .	100	0.57	5
Guards & Doorkeepers.	130	0.74	7
Food Service Workers	10	0.06	N/A
Supervisor, Nonworking Service. .	30	0.16	11
All Other Service Workers	50	0.26	N/A

	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Maintenance & Production Occupation. .	13,800	76.24	N/A
Mechanic, Automotive	10	0.05	4
Mechanic, Maintenance	180	0.99	8
All Other Mechanics & Repairers . .	50	0.26	N/A
Truck Driver	70	0.41	5
Carpenter	30	0.18	9
Crane, Derrick/Hoist Operators . .	20	0.09	10
Delivery & Route Worker	30	0.16	22
Electrician	110	0.62	6
Filer, Grinder, Buffers, Chippers Cleaners/Polishers	360	2.00	6
Supervisor, Nonworking Service . .	500	2.77	4
Industrial Truck Operator	220	1.23	6
Inspector	230	1.26	6
Machinist	140	0.80	6
Maintenance, Repairer, General Utility	280	1.12	7
Helper, Trades	120	0.67	9
Millwright.	50	0.26	9
Oiler	30	0.15	11
Order Filler	110	0.60	13
Painter, Maintenance.	10	0.05	9
Panelboard Operator	10	0.06	6
Pourer, Metal	110	0.60	6
Electroplater	50	0.26	6
Plumber/Pipefitter	30	0.15	4
Production Packager	120	0.68	20
Sand/Shotblaster.	30	0.18	14
Sheet Metal Worker	10	0.03	22
Stationary Boiler Firer	30	0.15	9
Tool & Die Maker	190	1.07	6
Welders and Flamecutters	120	0.68	8
Caster, Ingots & Pigs	20	0.09	6
Centrifugal-Casting-MachineOperator	10	0.03	20
Coiler, Winder.	280	1.55	14
Coremaker, Hand	130	0.74	6
Coremaker, Machine	30	0.16	11
Die Polisher.	90	0.52	5
Die Setter	10	0.02	24
Draw-Bench Operator	40	0.22	13
Drill-Press Operator.	90	0.48	14
Dust Operator	10	0.03	11
Insulating Extruding Machine Operator/Insulating Lead	590	3.30	7
Extrusion Press Operator.	150	0.80	15
Forging Press Operator.	50	0.30	31

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Forging/Straightening-Roll Operator	40	0.19	8
Grinding Machine Operator, Metal	160	0.87	7
Heat Treater, Annealer/Temperer	450	2.47	9
Lathe Machine Operator, Metal	80	0.43	14
Lay-Out Marker, Metal	20	0.08	12
Machine Tool Operator, Combination	60	0.32	18
Machine Tool Setter, Metal	10	0.05	19
Milling/Planing Machine Operator	40	0.20	13
Molder, Bench/ Floor	250	1.37	7
Molder, Machine	220	1.19	6
Molder, Pattern	10	0.05	34
Patternmaker, Wood	40	0.24	10
Pickler, Continuous Pickling Line	30	0.17	12
Plater, Helper	70	0.36	3
Sampler/Test Preparer	10	0.03	16
Sawyer, Metal	20	0.08	14
Setter Molding/Coremaking Machine	10	0.02	9
Shakeout Worker Foundry	100	0.55	5
Shell-Mold/Core Machine Operator	80	0.43	5
Slime Press/Filer Operator	10	0.03	5
Standing Machine Operator	340	1.90	12
Stretcher-Leveler Operator	70	0.40	11
Striping Machine Operator Insulated Wire	80	0.41	12
Tester	80	0.43	8
Wax Pattern Worker	50	0.26	32
Wire Drawer	500	2.76	6
Painter Production	80	0.46	16
Di-Cast Machine Operator/Setter	160	0.87	22
Punch-Press Operator, Metal	140	0.78	9
Punch-Press Setter, Metal	80	0.45	9
Shear/Slitter Operator, Metal	140	0.76	6
Shear/Slitter, Setter	30	0.15	8
Core Assembler/Paster	20	0.08	11
Dip Plater, Non-Electrolytic	30	0.17	7
Furnance Operator/Cupola Tender	160	0.86	9
Mixer, Ore/Metals	20	0.10	34
Furnace Charger	20	0.12	8
Furnace Operator/Helper or Heater	30	0.15	8
Insulation Wrapping/Braiding Machine Operator	200	1.12	12
Precipitator Operator	20	0.08	6
Scrap Sorter	10	0.07	11

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Power Brake/Bending Machine Operator, Metal	20	0.10	17
Mill/Grinder Operator, Material	60	0.30	10
Weigher, Production	40	0.20	19
Mold Closer, Core Setter/Weight and Jacket Setter	30	0.16	16
Sand Cutter, Mixer/Slinger	30	0.18	6
Assembler	1,680	9.34	4
Rolling Mill Operator/Attendent	170	0.94	12
Rolling Mill Operator Helper	120	0.64	2
All Other Skilled Craft/Kindred Workers	520	2.90	N/A
All Other Semiskilled Craft/Kindred Workers	1,690	9.40	N/A
All Other Laborers	800	4.43	N/A
Clerical Occupations	1,930	10.67	N/A
Bookkeeping/Billing Machine Operator	30	0.17	9
Computer Operator	30	0.18	6
Keypunch Operator	40	0.22	8
Stenographer	10	0.07	18
Accounting Clerk	80	0.42	6
Bookkeeper, Hand	80	0.45	6
File Clerk	20	0.09	11
General Clerk, Office	110	0.60	9
Order Clerk	90	0.52	9
Payroll/Timekeeping Clerk	80	0.41	5
Personnel Clerk	30	0.15	6
Procurement Clerk	30	0.15	5
Receptionist	20	0.10	11
Secretary	190	1.02	3
Statistical Clerk	20	0.08	10
Switchboard Operator	10	0.03	10
Switchboard Operator/Receptionist	50	0.28	5
Typist	90	0.48	5
Clerical Supervisor	50	0.27	17
All Other Office Clerical Workers	10	0.06	18
Production Clerk/Coordinator	230	1.29	8
Shipping Packer	330	1.82	8
Shipping/Receiving Clerk	120	0.66	4
Weigher, Recordkeeping	20	0.08	9
Stock Clerk, Stockroom	110	0.61	17
All Other Plant Clerical Workers	50	0.28	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Sales Occupations.	270	1.49	N/A
Sales Representative	230	1.28	5
Sales Clerk	40	0.20	13
TOTAL	18,100	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
BLAST FURNACE AND STEEL PRODUCTS (SIC 331)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	130	4.55	10
Professional Occupations	60	2.10	N/A
Mechanical Engineer	10	0.32	11
Metal Engineer	10	0.25	13
Purchasing Agent/Buyer	10	0.39	17
Accountants/Auditors	20	0.75	6
Personnel & Labor Relations Specialists	10	0.35	10
Technical Occupations	40	1.40	N/A
Drafter	10	0.21	36
Tool Programmer, Numerical Control	10	0.17	43
Science Technicians	10	0.17	N/A
All Other Technicians	10	0.39	N/A
Service Occupations	40	1.40	N/A
Janitors, Porters & Cleaners	20	0.82	33
Guards & Doorkkeepers	20	0.60	43
Maintenance & Production Occupations	2,170	75.87	N/A
Mechanic, Maintenance	50	1.82	14
All Other Mechanics & Repairers	10	0.29	N/A
Truck Driver	20	0.53	49
Carpenter	10	0.35	47
Crane, Derrick/Hoist Operator	10	0.35	38
Electrician	10	0.50	13
Filers, Grinders, Buffers, Chippers Cleaners/Polishers	40	1.36	49
Supervisor, Nonworking	120	4.34	8
Industrial Truck Operator	70	2.51	10
Inspector	20	0.86	38
Machinist	40	1.57	25
Maintenance Repairer, General Utility	50	1.68	22
Helper, Trades	30	1.00	38
Millwright	30	0.93	42
Oiler	10	0.17	19

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Plumber/Pipefitter	10	0.17	31
Production Packager	10	0.35	38
Stationary Boiler Firer	10	0.17	15
Tool and Die Maker	10	0.17	39
Welders and Flamecutters	50	1.75	38
Die Polishers	60	2.18	13
Draw-Bench Operator	20	0.64	42
Grinding Machine Operator, Metal	20	0.78	38
Heat Treater, Annealer	140	5.16	19
Pickler, Continuous Pickling Line	20	0.71	23
Stranding Machine Operator	10	0.17	N/A
Tester	30	0.96	23
Wire Drawer	240	8.46	15
Punch-Press Setter, Metal	20	0.78	47
Shear/Slitter Operator, Metal	40	1.36	34
Shear/Slitter Setter	20	0.68	32
Dip-Plater, Non-Electroytic	30	1.14	22
Furnance Operator/Cupola Tender	30	0.96	27
Power Brake/Bending Machine Operator, Metal	10	0.32	42
Weigher, Production	10	0.35	29
Assembler	30	1.18	33
Rolling Mill Operator/Attendant Rough or Finished	50	1.90	23
Rolling Mill Operator Helper, Rough or Finished	10	0.46	N/A
All Other Skilled Craft and Kindred Workers	50	1.82	N/A
All Other Semiskilled Craft and Kindred Workers	450	16.00	N/A
All Other Laborers	270	9.49	N/A
Clerical Occupations	350	12.24	N/A
Bookkeeping/Billing Machine Operator	10	0.35	43
Computer Operator	10	0.17	19
Keypunch Operator	10	0.32	26
Accounting Clerk	20	0.82	16
Bookkeeper, Hand	20	0.60	35
File Clerk	10	0.21	39
General Clerk, Office	20	0.75	26
Order Clerk	10	0.21	18
Payroll/Timekeeping Clerk	20	0.82	14
Procurement Clerk	10	0.21	20
Secretary	20	0.75	7
Switchboard Operator	10	0.17	46
Switchboard Operator/Receptionist	10	0.28	31
Typist	20	0.57	25

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Clerical Supervisor	10	0.25	36
All Other Office Clerical	20	0.68	N/A
Production Clerk/Coordinator. . .	30	1.21	16
Shipping Packer	30	0.93	24
Shipping/Receiving Clerk	40	1.25	14
Weigher, Record Keeping	10	0.32	42
Stock Clerk, Stockroom	10	0.32	33
Sales Occupations	70	2.45	N/A
Sales Representative	70	2.45	30
TOTALS	2,860	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
IRON AND STEEL FOUNDRIES (SIC 332)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	90	4.39	16
Professional Occupations	40	1.95	N/A
Industrial Engineer	10	0.24	28
Metal Engineer	10	0.29	34
All Other Engineers	10	0.39	N/A
Purchasing Agent/Buyer	10	0.68	18
All Other Professional Workers . .	10	0.39	N/A
Technical Occupations	10	0.49	N/A
All Other Engineering Technicians.	10	0.49	N/A
Service Occupations	40	1.95	N/A
Janitors, Porters & Cleaners . . .	10	0.58	23
Guards and Doorkeepers	10	0.24	43
Supervisor, Nonworking Service .	20	1.07	45
Maintenance and Production Occupations	1,650	80.49	N/A
Mechanic, Automotive	10	0.24	31
Mechanic, Maintenance	20	0.93	15
All Other Mechanics and Repairers	10	0.24	N/A
Truck Driver	10	0.63	30
Carpenter	10	0.39	43
Electrician	10	0.58	20
Filers, Grinders, Etc.	140	7.01	16
Supervisor, Nonworking	90	4.51	11
Industrial Truck Operator	20	1.17	23
Inspector	10	0.34	34
Maintenance Repairer, General Utility	50	2.50	10
Helper, Trades	20	0.73	49
Pourer, Metal	90	4.21	22
Production Packager	10	0.49	44
Sand & Shotblaster	10	0.58	33
Welders and Flamecutters	10	0.49	21
Coremaker, Hand	80	4.02	15
Coremaker, Machine	10	0.34	32
Grinding Machine Operator, Metal .	70	3.62	40
Molder, Bench/Floor	120	5.68	21
Molder, Machine	130	6.52	20
Patternmaker Wood	20	0.93	30
Setter Molding/Coremaker	10	0.24	31
Shakeout Worker Foundry	70	3.62	14
Shell-Mold/Coremaker	80	3.87	16

SIC 332 (con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Core Assembler, Paster	10	0.44	31
Furnace Operator/Cupola Tender .	30	1.32	18
Furnace Charger	20	1.12	24
Helper. Furnace Operator/Heater	10	0.53	27
Sand Cutter, Mixer and/or Slinger	20	1.02	17
All Other Skilled Workers . . .	10	0.64	N/A
All Other Semiskilled Workers .	160	7.84	N/A
All Other Laborers	290	13.96	N/A
Clerical Occupations	190	9.27	N/A
Bookkeper, Hand	20	0.73	25
General Clerk, Office	30	1.32	35
Order Clerk	10	0.24	32
Payroll/Timekeeping Clerk . . .	10	0.44	19
Secretary	10	0.44	23
Typist	10	0.39	20
Clerical Supervisor	10	0.24	70
All Other Office Clerical Workers	20	1.18	N/A
Production Clerk/Coordinator . .	10	0.39	21
Shipping Packer	60	2.84	26
Shipping/Receiving Clerk . . .	10	0.68	16
All Other Plant Clerical Workers	10	0.24	N/A
Sales Occupations	30	1.46	N/A
Sales Representatives	30	1.32	25
TOTAL	2,050	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
NONFERROUS ROLLING DRAWING (SIC 335)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	420	4.60	21
Professional Occupations	400	4.38	N/A
Electrical & Electronic Engineer .	20	0.21	41
Industrial Engineer.	70	0.80	29
Mechanical Engineer.	50	0.54	21
Metal Engineer	40	0.39	23
All Other Engineers.	20	0.23	N/A
Systems Analyst, EDP	30	0.32	20
Purchasing Agent/Buyer	30	0.34	18
Accountants/Auditors	50	0.57	25
Nurse, Professional.	10	0.09	28
Personnel & Labor Relations Specialists.	30	0.28	27
All Other Professional Workers . .	50	0.55	N/A
Technical Occupations.	140	1.53	N/A
Drafter.	40	0.38	19
All Other Engineer Technicians . .	70	0.74	N/A
Science Technicians.	20	0.20	N/A
All Other Technicians	20	0.17	N/A
Service Occupations.	190	2.08	N/A
Janitors, Porters & Cleaners . . .	50	0.55	26
Guards & Doorkeepers	70	0.79	40
Food Service Workers	10	0.13	N/A
All Other Service Workers.	50	0.55	N/A
Maintenance & Production Occupations	6,840	74.84	N/A
All Other Mechanics & Repairers. .	120	1.30	N/A
Truck Driver	20	0.17	41
Electrician	80	0.83	26
Supervisor, Nonworking	170	1.84	32
Industrial Truck Operator.	120	1.25	36
Inspector.	140	1.48	27
Machinist.	30	0.32	36
Millwright	10	0.15	N/A
Electroplater.	40	0.47	21
Plumber/Pipefitter	20	0.20	17
Stationary Boiler Firer.	20	0.24	36

SIC 335 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Tool & Die Maker.	150	1.67	22
Coiler, Winder/Spooler	270	2.98	46
Insulating Extruding Machine Operator/Lead Press Operator . . .	590	6.49	23
Forging/Straightening Roll Operator	20	0.22	N/A
Plater Helper	50	0.59	N/A
Stranding Machine Operator.	170	1.85	46
Stretcher-Leveler Operator.	40	0.41	43
Striping Machine Operator, Insulating Wire.	80	0.81	36
Wire Drawer	150	1.60	33
Punch-Press Operator, Metal	60	0.61	N/A
Punch-Press Setter, Metal	50	0.51	44
Shear/Slitter Operator, Metal . . .	80	0.81	19
Insulation Wrapping/Braiding Machine Operator	200	2.20	39
Assembler	1,570	17.10	11
Rolling Mill Operator, Helper . . .	100	1.12	8
All Other Skilled Craft and Kindred Workers	520	5.66	N/A
All Other Semiskilled Craft and Kindred Workers	1,530	16.69	N/A
All Other Laborers.	460	5.06	N/A
Clerical Occupations.	1,040	11.38	N/A
Computer Operator	30	0.28	24
Keypunch Operator	20	0.25	43
All Other Office Machine Operators.	10	0.10	N/A
Accounting Clerk.	30	0.33	38
Bookkeeper, Hand	20	0.16	47
Order Clerk	70	0.75	35
Payroll/Timekeeping Clerk	30	0.28	31
Personnel Clerk	20	0.19	26
Procurement Clerk	10	0.15	25
Secretary	100	1.10	15
Switchboard Operator/Reception. . .	20	0.21	28
Typist.	50	0.53	27
All Other Office Clerical Workers .	90	0.97	N/A
Production Clerk/Coordinator. . . .	170	1.86	33
Shipping Packer	200	2.19	38
Shipping/Receiving Clerk.	40	0.45	29
All Other Plant Clerical Workers. .	140	1.53	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Sales Occupations.	110	1.20	N/A
Sales Representative..	90	0.99	30
Sales Clerk.	20	0.21	N/A
TOTAL	9,140	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

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The job level within the manufacutuing sub-group ordnance and accessories, except for vehicles and guided missiles, was 5500 in 1980. The industry is composed of only 11 establishments, three of which account for more than 77 percent of total employment. This industrial segment employed more than 10 percent of fabricated metal products (SIC 34) workers.

A distinguishing characteristic of the occupational composition of manufacturing industries is the concentration of employment, approximately 64 percent, in blue collar fields of work. Among durable goods industries the percentage share of blue collar workers is lower, just under 60 percent. In contrast to the occupational composition of durable goods industries at the summary level, workers engaged in maintenance and production activities in establishments manufacturing ordnance and accessories products, represented more than 77 percent of total employment.

Combination machine tool operators, inspectors, and assemblers were numerically the more prominent occupations among maintenance and production workers.

	Employment	Percent
Total, All Occupations	5520	100.00
Maintenance and Production Occ.	4280	77.54
Combination Machine Tool Operator	960	17.39
Inspector	490	8.88
Assembler	430	7.79

These three occupational titles alone accounted for more than 1 of every 3 positions in this 3-digit industry.

No single occupational title in any of the other major occupational categories commanded even a two percent share of total industry employment. It is interesting to note, however, that while professional workers accounted for less than five percent of total employment, engineers represented more than 57 percent of employment in professional positions.

As of 1979, Massachusetts' share of military prime contract awards $10,000 and greater, placed her sixth relative to all other states in the union. 1/ The recent appropriations by Congress of increased defense expenditures, brightens considerably the outlook for employment growth among defense- related industries in Massachusetts.

1/ Defense Spending and Massachusetts Employment, 1969 - 1979, DES.

OCCUPATIONS OF EMPLOYEES
ORDINANCE AND ACCESSORIES (SIC 348)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	130	2.36	2
Professional Occupations	250	4.53	N/A
Industrial Engineer	80	1.56	1
Mechanical Engineer	40	0.76	1
All Other Engineers	20	0.33	N/A
Systems Analyst, EDP	10	0.23	N/A
Purchasing Agent &/or Buyer	20	0.41	2
Accountants and Auditors	20	0.41	N/A
Cost Estimator	10	0.14	9
Nurse, Professional	10	0.14	N/A
Personnel/Labor Relations Specialist	30	0.49	N/A
All Other Professional Workers	10	0.10	N/A
Technical Occupations	90	1.63	N/A
Computer Programmer	30	0.56	N/A
Drafter	20	0.38	3
All Other Engineering Technicians	30	0.53	4
All Other Technicians	10	0.18	N/A
Service Occupations	150	2.72	N/A
Janitors, Porters, & Cleaners	80	1.41	N/A
Guards & Doorkeepers	50	0.83	N/A
Food Service Workers	20	0.34	N/A
Maintenance and Production Occupations	4,280	77.54	N/A
Mechanic, Maintenance	70	1.23	N/A
Truck Driver	10	0.25	N/A
Carpenter	10	0.18	N/A
Electrician	30	0.58	N/A
Filers, Grinders, Etc.	160	2.83	1
Supervisor, Nonworking	200	3.57	1
Industrial Truck Operator	30	0.50	4
Inspector	490	8.82	N/A
Maintenance Repairer, General Utility	60	1.05	N/A
Helper, Trades	10	0.19	4
Oiler	10	0.21	N/A
Painter, Maintenance	10	0.10	N/A
Plumber &/or Pipefitter	20	0.30	N/A
Production Packager	20	0.36	8

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Stationary Boiler Firer	10	0.09	N/A
Tool and Die Maker	110	2.06	1
Welders and Flamecutters	20	0.30	N/A
Die Sinker	10	0.10	N/A
Drill Press Operator	80	1.43	3
Etcher & or Engraver	10	0.14	N/A
Forging Press Operator	50	0.85	N/A
Forging/Straightening	50	0.87	N/A
Grinding Machine Operator, Metal	160	2.97	2
Heat Treater, Annealer	20	0.29	N/A
Lathe Machine Operator, Metal	80	1.45	N/A
Machine Tool Operator, Combination	960	17.36	1
Machine Tool Operator, Numerical Control	30	0.59	N/A
Machine Tool Operator, Toolroom	60	1.03	N/A
Machine Tool Setter, Metal	230	4.15	1
Milling/Planning Machine Operator	100	1.77	2
Patternmaker Wood	10	0.10	N/A
Plater Helper	10	0.21	N/A
Tester	30	0.47	N/A
Woodworking/Machine	40	0.76	N/A
Painter Production	30	0.49	N/A
Punch Press Operator, Metal	30	0.50	8
Dip Plater, Non-Electrical	10	0.25	N/A
Helper, Furnace Operator/Heater	40	0.65	N/A
Assembler	430	7.80	1
All Other Skilled Workers	40	0.65	N/A
All Other Semiskilled Workers	50	0.91	N/A
All Other Laborers	500	9.00	N/A
Clerical Occupations	550	9.96	N/A
Computer Operator	20	0.27	N/A
Keypunch Operator	20	0.41	N/A
Accounting Clerk	30	0.49	1
Bookkeeper, Hand	10	0.18	N/A
File Clerk	40	0.72	N/A
General Clerk, Office	20	0.27	4
Order Clerk	10	0.23	N/A
Payroll/Timekeeping Clerk	20	0.38	N/A
Personnel Clerk	10	0.14	N/A
Procurement Clerk	10	0.14	N/A
Secretary	60	1.01	1
Switchboard Operator/Receptionist	10	0.09	N/A
Typist	50	0.92	N/A
Clerical Supervisor	10	0.23	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
All Other Office Clerical Workers	10	0.24	N/A
Production Clerk/Coordinator . .	70	1.30	1
Shipping Packer	30	0.59	N/A
Shipping/Receiving Clerk . . .	40	0.68	N/A
Stock Clerk, Stockroom	70	1.17	N/A
All Other Plant Clerical Workers	30	0.52	N/A
Sales Occupations	50	0.91	N/A
Sales Representatives	50	0.91	N/A
TOTAL	5,520	100.00	-

N/A Relative Error Not Available
Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
PLUMBING AND HEATING EQUIPMENT, NONELECTRIC (SIC 343)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	120	8.05	22
Professional Occupations	70	4.70	N/A
Mechanical Engineer	40	2.48	42
All Other Engineers	10	0.94	N/A
All Other Professional Workers	20	1.40	N/A
Technical Occupations	20	1.34	N/A
Drafter	10	0.60	33
All Other Engineering Technicians	10	0.73	N/A
Service Occupations	10	0.67	N/A
Janitors, Porters, & Cleaners	10	0.67	33
Maintenance and Production Occupations	1,070	71.81	N/A
Mechanic, Maintenance	20	1.07	46
Filers, Grinders, Etc.	50	3.21	33
Supervisor, Nonworking	70	4.56	13
Industrial Truck Operator	30	1.67	27
Pourer, Metal	10	0.60	42
Sand &/or Shotblaster	20	1.20	36
Tool and Die Maker	10	0.73	40
Welders and Flamecutters	170	11.20	49
Drill Press Operator	40	2.41	26
Grinding Machine Operator, Metal	20	1.20	42
Shakeout Worker Foundry	20	1.20	42
Tester	30	2.14	33
All Other Skilled Workers	40	2.54	N/A
Assembler	80	5.36	28
All Other Semiskilled Workers	310	20.81	N/A
All Other Laborers	150	10.07	N/A
Clerical Occupations	150	10.07	N/A
Accounting Clerk	10	0.93	45
General Clerk, Office	20	1.40	36
Secretary	30	2.14	22
All Other Office Clerical Workers	60	4.03	N/A
All Other Plant Clerical Workers	30	2.27	N/A
Sales Occupations	50	3.36	N/A
Sales Representatives	50	3.36	31
TOTAL	1,490	100.00	-

N/A Relative Error Not Available   Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
STRUCTURAL METAL PRODUCTS (SIC 344)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	880	9.09	8
Professional Occupations	380	3.93	N/A
Civil Engineer	10	0.10	46
All Other Engineers	20	0.20	N/A
Industrial Engineer	30	0.26	22
Mechanical Engineer	80	0.86	24
Systems Analyst, EDP	10	0.06	30
Purchasing Agent/Buyer	80	0.78	7
Accountants and Auditors	70	0.75	24
Cost Estimator	50	0.51	25
Personnel/Labor Relations Specialist	10	0.13	25
Designer	20	0.16	28
All Other Professional Workers	10	0.06	N/A
Technical Occupations	270	2.79	N/A
Computer Programmer	10	0.08	33
Drafter	220	2.31	12
Tool Programmer, Numerical Control	30	0.27	46
All Other Engineering Technicians	10	0.08	N/A
Service Occupations	120	1.24	N/A
Janitors, Porters & Cleaners	90	0.93	10
Supervisor, Nonworking Service	20	0.21	33
All Other Service Workers	10	0.09	N/A
Maintenance and Production Occupations	6,850	70.76	N/A
Mechanic, Automotive	10	0.05	38
Mechanic, Maintenance	60	0.65	15
Truck Driver	140	1.43	14
Carpenter	30	0.34	26
Crane, Derrick, and Hoist Operator	40	0.43	44
Delivery & Route Worker	40	0.41	25
Electrician	20	0.23	24
Filers, Grinders, Etc.	110	1.13	23
Supervisor, Nonworking	220	2.24	11
Glazier	70	0.75	34
Industrial Truck Operator	60	0.60	18
Inspector	90	0.96	12
Machinist	90	0.95	49
Maintenance Repairer, General Utility	20	0.23	19

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Helper, Trades	390	4.01	18
Millwright	50	0.55	46
Order Filler	20	0.20	29
Painter, Maintenance	10	0.09	38
Production Packager	70	0.71	29
Refractory Materials Repairer	10	0.06	44
Roll Forming Machine Operator	10	0.11	47
Sand/Shotblaster	30	0.27	18
Sheet Metal Worker	800	8.32	24
Tool and Die Maker	20	0.21	17
Welders and Flamecutters	980	10.16	10
Drill Press Operator	100	0.99	19
Grinding Machine Operator, Metal	100	1.05	29
Lathe Machine Operator, Metal	50	0.51	41
Lay-Out Marker, Metal	290	2.99	24
Machine Tool Operator, Combination	120	1.27	35
Machine Tool Operator, Numerical Control	40	0.37	37
Machine Tool Setter, Metal	50	0.46	31
Milling/Planing Machine Operator	40	0.37	42
Power-Screwdriver Operator	40	0.44	47
Sawyer, Metal	40	0.45	30
Painter Production	150	1.52	16
Punch-Press Operator, Metal	490	5.09	18
Punch-Press Setter, Metal	20	0.20	35
Shear/Slitter Operator, Metal	110	1.09	21
Shear/Slitter Setter	40	0.43	27
Fitter, Structural Metal	140	1.45	26
Power Brake/Bending Machine Operator	320	3.31	13
Assembler	680	6.98	18
All Other Skilled Workers	150	1.50	N/A
All Other Semiskilled Workers	280	2.92	N/A
All Other Laborers	210	2.20	N/A
Clerical Occupations	950	9.81	N/A
Bookkeeping/Billing Machine Operator	30	0.30	23
Computer Operator	30	0.26	19
All Other Office Machine Operators	10	0.08	N/A
Accounting Clerk	30	0.31	18
Bookkeeper, Hand	150	1.52	14
General Clerk, Office	160	1.68	15
Order Clerk	10	0.10	32
Payroll/Timekeeping Clerk	20	0.20	26
Personnel Clerk	10	0.08	34
Procurement Clerk	10	0.11	28
Receptionist	10	0.07	31

SIC 344 (con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Secretary	150	1.58	11
Switchboard Operator	10	0.09	30
Switchboard Operator/Reception	30	0.28	13
Typist	30	0.28	26
Clerical Supervisor	30	0.34	21
All Other Office Clerical Workers	30	0.34	N/A
Production Clerk/Coordinator	30	0.35	26
Shipping Packer	40	0.38	22
Shipping/Receiving Clerk	70	0.75	15
Stock Clerk, Stockroom	40	0.43	14
All Other Plant Clerical Workers	20	0.17	N/A
Sales Occupations	230	2.38	N/A
Sales Representatives	200	2.06	13
Sales Clerk	30	0.26	27
TOTAL	9,680	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
SCREW MACHINE PRODUCTS, BOLTS, ETC. (SIC 345)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	280	7.39	7
Professional Occupations	110	2.90	N/A
Industrial Engineer	20	0.50	18
Mechanical Engineer	10	0.37	34
Systems Analyst, EDP	10	0.15	40
Purchasing Agent &/or Buyer	20	0.42	16
Accountants and Auditors	20	0.50	19
Cost Estimator	20	0.47	19
Personnel & Labor Relations Specialist	10	0.37	21
Technical Occupations	40	1.06	N/A
Drafter	20	0.47	21
All Other Engineering Technicians	20	0.50	N/A
Service Occupations	80	2.11	N/A
Janitors, Porters, & Cleaners	60	1.48	17
Guards & Doorkeepers	10	0.18	43
Supervisor, Nonworking Service	10	0.34	N/A
Maintenance and Production Occupations	2,930	77.31	N/A
Mechanic, Maintenance	20	0.47	27
Truck Driver	10	0.37	29
Filers, Grinders, Etc.	100	2.72	47
Supervisor, Nonworking	70	1.82	19
Industrial Truck Operator	20	0.47	27
Inspector	130	3.51	13
Machinist	40	1.03	39
Maintenance Repairer, General Utility	40	1.03	21
Helper, Trades	30	0.76	43
ElectroPlater	10	0.31	45
Production Packager	50	1.21	49
Tool and Die Maker	70	1.71	18
Drill Press Operator	230	6.10	19
Grinding Machine Operator, Metal	50	1.26	27
Lathe Machine Operator, Metal	700	18.48	14
Machine Tool Operator, Combination	610	16.10	15
Machine Tool Operator, Toolroom	20	0.42	37
Machine Tool Setter, Metal	120	3.17	24
Assembler	110	3.01	36

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
All Other Skilled Workers	70	1.80	N/A
All Other Semiskilled Workers . .	310	8.18	N/A
All Other Laborers	120	3.17	N/A
Clerical Occupations	320	8.44	N/A
Bookkeeping Machine Operator . .	10	0.23	28
Accounting Clerk	10	0.29	20
Bookkeeper, Hand	40	1.16	15
File Clerk	10	0.15	47
General Clerk, Office	60	1.61	17
Order Clerk	10	0.15	47
Payroll/Timekeeping Clerk . . .	10	0.29	21
Receptionist	10	0.15	37
Secretary	30	0.68	24
Switchboard Operator/Receptionist	10	0.18	28
All Other Office Clerical Workers	20	0.45	N/A
Typist	10	0.34	19
Clerical Supervisor	10	0.15	32
Production Clerk/Coordinator . .	10	0.34	23
Shipping Packer	30	0.89	19
Shipping/Receiving Clerk	20	0.63	22
Stock Clerk, Stockroom	20	0.63	17
Sales Occupations	30	0.79	N/A
Sales Representatives	30	0.79	24
TOTAL	3,790	100.00	N/A

N/A Relative Error Not Available
Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
METAL SERVICES, N.E.C. (SIC 347)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	380	8.00	8
Professional Occupations	130	2.74	N/A
Industrial Engineer	10	0.12	28
Mechanical Engineer	20	0.46	29
All Other Engineers	10	0.13	N/A
Purchasing Agent &/or Buyer	10	0.23	27
Accountants and Auditors	20	0.50	21
Cost Estimator	20	0.44	19
Personnel & Labor Relations Specialist	10	0.14	26
All Other Professional Workers	30	0.63	N/A
Technical Occupations	20	0.42	N/A
Science Technicians	20	0.42	N/A
Service Occupations	110	2.32	N/A
Janitors, Porters, & Cleaners	80	1.77	17
All Other Service Workers	30	0.63	N/A
Maintenance and Production Occupations	3,590	75.58	N/A
Mechanic, Automotive	10	0.23	34
Mechanic, Maintenance	50	0.96	30
Truck Driver	100	2.02	17
Filers, Grinders, Etc.	190	4.02	30
Supervisor, Nonworking	150	3.22	16
Industrial Truck Operator	40	0.84	25
Inspector	70	1.53	29
Maintenance Repairer, General Utility	20	0.35	31
Electroplater	610	12.87	17
Press Operator and/or Plate Printer	70	1.39	27
Tool and Die Maker	20	0.44	32
Plater Helper	430	8.95	22
Painter Production	410	8.53	24
Punch Press Operator, Metal	270	5.77	28
Punch Press Setter, Metal	30	0.54	35
Shear/Slitter Setter	30	0.61	30
All Other Skilled Workers	50	1.05	N/A
All Other Semiskilled Workers	610	12.88	N/A
All Other Laborers	430	9.05	N/A

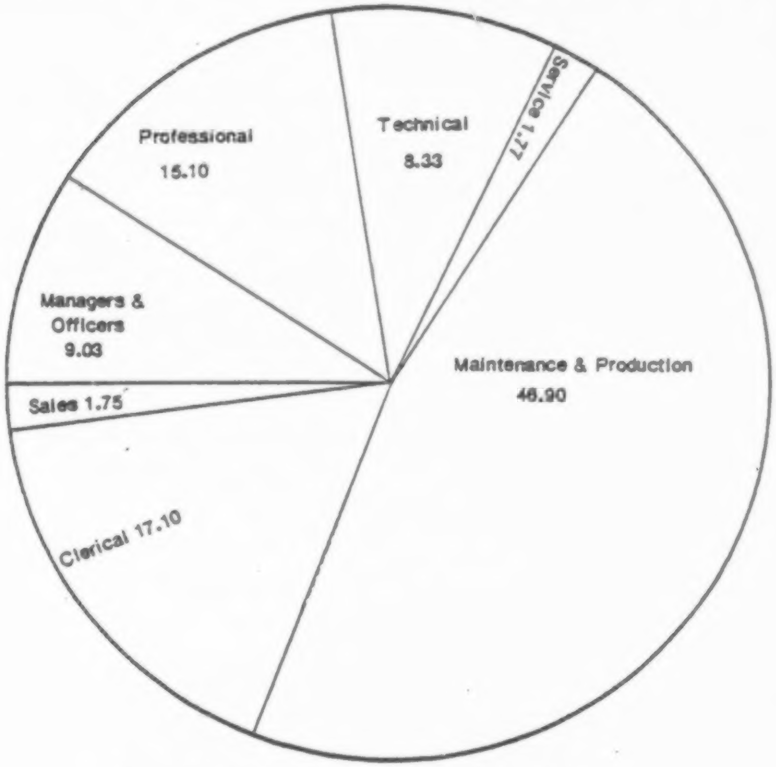
OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Clerical Occupations	460	9.68	N/A
Accounting Clerk	20	0.40	24
Bookkeeper, Hand	100	2.08	11
File Clerk	10	0.14	26
General Clerk, Office	110	2.32	14
Order Clerk	10	0.25	28
Payroll/Timekeeping Clerk . . .	10	0.23	26
Procurement Clerk	10	0.12	27
Receptionist	10	0.18	22
Secretary	60	1.32	16
Switchboard Operator	10	0.12	28
Typist	10	0.27	26
Clerical Supervisor	10	0.18	21
All Other Office Clerical Workers	20	0.46	N/A
Production Clerk/Coordinator . .	20	0.50	26
Shipping Packer	20	0.42	27
Shipping/Receiving Clerk	20	0.33	N/A
Stock Clerk, Stockroom	10	0.27	35
Sales Occupations	60	1.26	N/A
Sales Representatives	60	1.26	19
TOTAL	4,750	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

MACHINERY, EXCEPT ELECTRICAL (SIC 35)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	Managers and Officers	9,780
2.	Electrical/Electronic Assembler	5,850
3.	Electrical and Electronics Technicians	3,840
4.	Secretary	3,690
5.	Electrical and Electronics Engineers	2,990
6.	Inspector	2,950
7.	All Other Professional Workers	2,930
8.	All Other Semiskilled Workers	2,590
9.	Supervisor, Nonworking	2,510
10.	Lathe Machine Operator, Metal	2,490

These 10 occupational categories make up 37% of total industry employment.

This major group includes establishments engaged in manufacturing machinery and·equipment, other than electrical equipment and transportation equipment. Machines powered by built-in or detachable motors ordinarily are included in this major group, with the exception of electrical household appliances.

Employment in the nonelectric machinery industry has increased 33.5 percent from 1977 to 1980, while total nonagricultural employment grew 9.6 percent over the same time period. The nonelectrical machinery segment is one of Massachusetts' leading growth industries. One of the major factors in its continued growth is the demand for the products produced. Special industrial machinery (SIC 355) employers manufacture equipment used by such industries as food, textile, paper, printing, and woodworking. These nondurable goods manufacturers, in order to improve their productivity, have in recent years been automating their plants with the use of special industrial machinery.

Office, computing and accounting machinery (SIC 357) more than doubled its employment in the four year period between 1976 and 1980. In just one year, from 1979 to 1980, employment in this industry grew 17.8 percent, and currently (1980) it represents 42.4 percent of the nonelectrical machinery segment. Employers in this industry manufacture products such as electronic computing machines, typewriters, calculating and accounting machines, and non-laboratory scales and balances. These products are not only in high demand at the national level, but also make up a large portion of our export market. Employment growth in this industry has shown no signs of abating and growth should continue as long as the demand for its products remains high.

Another important nonelectrical machinery industry is engines and turbines (SIC 351). This industry is included in the other nonelectrical machinery group. The demand for new and advance defense equipment has been a major factor in some recent employment growth in this industry.

The occupational distribution within the nonelectrical machinery industry reveals that the highest percentage of occupations are professional/technical occupations (23.4 percent) and maintenance and production occupations (46.9 percent). A look at the 1974 survey reveals that an occupational shift has occurred during the decade, especially in the professional/technical and maintenance occupations. A much larger percentage of professional/technical workers make up total nonelectrical machinery workers in 1980 than they did in 1974 (23.4 percent vs. 13.5 percent) while maintenance and production workers now represent less than 50 percent of industry employment (61.0 percent vs. 46.9 percent). Office, computing, and accounting machinery (SIC 357) is the only 3-digit industry to record a higher percentage of professional/technical workers (37.0 percent) than maintenance and production workers (30.2 percent).

CHANGE IN OCCUPATIONAL DISTRIBUTION
1974 OES TO 1980 OES
SIC 35

	1974	1980
Professional/Technical Occupations	13.5	23.4
Managers and Administrators	8.1	9.0
Sales Occupations	1.7	1.7
Clerical Occupations	13.8	17.1
Maintenance & Production Occupations	61.0	46.9
Service Occupations	1.9	1.8
TOTAL	100.0	100.0

PERCENT OF OCCUPATIONAL DISTRIBUTION
1980 OES SURVEY

	35	351	355	356	357	359
Managers and Officers	9.03	10.43	9.23	9.57	9.88	8.42
Professional Occupations	15.11	15.95	13.18	7.70	24.00	4.06
Technical Occupations	8.33	2.45	9.76	5.31	13.02	1.89
Service Occupations	1.77	1.99	1.59	1.25	1.44	1.16
Maintenance and Production Occupations	46.9	56.90	44.76	58.48	30.15	72.57
Clerical Occupations	17.10	11.96	18.82	15.40	20.54	9.58
Sales Occupations	1.75	0.31	2.65	1.29	0.98	2.38
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

The following table denotes changes that have occurred especially within the professional/technical occupations. One should take note that a slight decline in the percentage share of an occupation does not necessarily mean a decline in its employment level. For example, drafter (SIC 35) had approximately the same employment levels,1,250 for 1974 and 1,260 for 1980,but its' share of the industry total declined from 1.6 percent to 1.1 percent.

Because of the tremendous growth that has occurred in these industries, one can only assume that it relied heavily on the influx of the professional/technical workers. Their impact in these industries is needed to produce new technologic equipment, new applications of old equipment, and redesign of current equipment. As long as the demand exists for products produced by these industries, so will the demand exist for these professional/technical workers.

PERCENT OF OCCUPATIONAL EMPLOYMENT

	SIC 35		SIC 355		SIC 351
	JUNE		JUNE		JUNE
	1974	1980	1974	1980	1980
Managers and Officers	8.08	9.03	6.68	9.23	9.88
Professional Occupations	7.67	15.11	8.80	13.18	24.00
Electrical/Electronic Engineer	1.02	2.76	0.29	0.70	5.68
Industrial Engineer	0.71	2.10	0.53	1.11	3.37
Technical Occupations	5.84	8.33	4.21	9.76	13.02
Computer Programmer	0.68	2.16	0.35	0.87	4.36
Drafter	1.57	1.16	1.11	2.01	0.73
Electronic Technician	1.39	3.54	0.23	4.03	6.63
Service Occupations	1.87	1.77	1.76	1.59	1.44
Maintenance & Production Occupations	60.96	46.90	61.56	44.76	30.15
Machinists	3.11	1.95	2.99	NA	0.33
Tool & Die Maker	2.80	1.66	1.29	NA	0.07
Clerical Occupations	13.85	17.10	15.68	18.82	20.54
Sales Occupations	1.74	1.75	1.35	2.65	0.98
TOTAL	100.0	100.0	100.0	100.0	100.0

OCCUPATIONS OF EMPLOYEES
MACHINERY, EXCEPT ELECTRICAL (SIC 35)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	9,780	9.03	3
Professional Occupations	16,350	15.11	N/A
Chemical Engineer.	90	0.08	26
Civil Engineer	40	0.03	6
Electrical & Electronic Engineer .	2,990	2.76	5
Industrial Engineer.	2,280	2.10	4
Mechanical Engineer.	1,690	1.56	7
Metal Engineer	40	0.04	19
All Other Engineers.	520	0.47	N/A
Mathmetical Scientist.	10	0.01	24
Chemist	50	0.04	16
Systems Analysts, Business	700	0.64	8
Systems Analysts, Scientific and Technical	430	0.40	12
Purchasing Agent/Buyer	680	0.63	3
Accountants/Auditors	1,570	1.45	3
Commerical Artist	180	0.16	7
Cost Estimator	190	0.17	13
Writer/Editor	430	0.40	7
Nurse, Professional.	100	0.09	6
Personnel/Labor Relations Specialists	640	0.59	4
Designer	650	0.59	4
Contract Administrator	190	0.17	6
All Other Professional Workers . .	2,880	2.70	N/A
Technical Occupations	9,020	8.33	N/A
Computer Programmer, Business. . .	1,240	1.14	5
Computer Programmer, Scientific and Technical	1,110	1.02	9
Drafter	1,260	1.16	4
Electrical & Electronic Technician	3,840	3.54	3
Mechanical Engineer Technician . .	470	0.43	12
Tool Programmer, Numerical Control	200	0.18	10
Industrial Engineer Technician . .	200	0.18	10
All Other Engineer Technicians . .	210	0.19	N/A
All Other Technicians	490	0.44	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Service Occupations	1,920	1.77	N/A
Janitors, Porters & Cleaners	1,020	0.94	4
Guards & Doorkeepers	370	0.34	6
Supervisors, Nonworking, Service	290	0.26	34
All Other Service Workers	240	0.	N/A
Maintenance & Production Occupations	50,760	46.90	N/A
Mechanic, Automotive	20	0.01	15
Mechanic, Maintenance	560	0.52	9
Office Machine Servicer and/or Cash Register Servicer	140	0.13	37
Refrigeration/Air Conditioning Mechanic	30	0.02	11
Data Processing Machine Reparier	70	0.06	19
All Other Mechanics & Repairers	340	0.31	N/A
Truck Driver	250	0.22	6
Blacksmith	80	0.06	13
Carpenter	140	0.12	7
Crane, Derrik/Hoist Operator	60	0.05	2
Delivery & Route Worker	130	0.12	15
Electrician	420	0.38	5
Filers, Grinders, Buffers, Chippers Cleaners/Polishers	800	0.74	8
Supervisor, Nonworking	2,510	2.31	4
Gear Cutting, Grinding/Gear Shaping Machine Operator	1,030	0.95	34
Heater, Metal	100	0.09	23
Rigger	50	0.04	7
Industrial Truck Operator	450	0.41	10
Inspector	2,950	2.72	7
Instrument Repairer	20	0.01	32
Machinist	2,120	1.95	11
Maintenance Repairer, General Utility	480	0.44	15
Helpers, Trades	240	0.22	14
Millwright	290	0.26	15
Oiler	40	0.03	17
Order Filler	230	0.21	17
Painter, Maintenance	70	0.06	8
Electroplater	50	0.04	26
Plumber/Pipefitter	160	0.14	5
Production Packager	340	0.31	18
Sand/Shotblaster	80	0.07	22
Sheet Metal Worker	470	0.43	8
Stationary Boiler Firer	50	0.04	8
Stationary Engineer	20	0.02	12
Tool and Die Maker	1,800	1.66	15

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Welders and Flamecutters.	1,140	1.05	5
Coremaker, Hand	10	0.01	29
Die Setter	30	0.02	30.
Drill-Press Operator	1,400	1.30	8
Etcher/Engraver	120	0.10	19
Forging Press Operator	10	0.00	23
Grinding Machine Operator, Metal. .	2,290	2.11	17
Heat Treater, Annealer/Temperer . .	310	0.28	30
Lathe Machine Operator, Metal . . .	2,490	2.30	6
Lay-Out Maker, Metal	80	0.07	10
Machine Tool Operator, Combination.	1,860	1.71	8
Machine Tool Operator, Numerical Control	1,690	1.55	9
Machine Tool Operator, Toolroom . .	920	0.85	29
Machine Tool Setter, Metalworking .	680	0.62	12
Milling/Planing Machine Operator. .	1,990	1.83	6
Molder, Bench/Floor	10	0.00	19
Molder, Machine	10	0.00	20
Patternmaker, Metal	90	0.08	19
Patternmaker, Wood	180	0.16	16
Plater, Helper	30	0.02	13
Sawyer, Metal	420	0.38	31
Shakeout Worker, Foundry	10	0.00	20
Tester	1,550	1.42	9
Woodworking Machine Operator. . . .	10	0.01	10
Painter, Production	400	0.37	6
Riveter, Light	10	0.00	13
Punch-Press Operator, Metal	480	0.44	18
Punch-Press Setter, Metal	40	0.03	24
Shear/Slitter Operator, Metal . . .	40	0.03	12
Shear/Slitter, Setter	50	0.04	16
Compression/Injection-Molding Machine Operator, Plastics	40	0.03	29
Dip Plater, Non-Electrolytic. . . .	60	0.05	16
Helper Furnace Operator/Heater . .	20	0.01	33
Power Brake/Bending Machine Operator Metal	150	0.13	9
Sand Cutter, Mixer/Slinger	10	0.00	20
Machine Assembler	2,480	2.28	5
Electro-Mechanical Equipment Assembler	1,820	1.68	10
Electrical/Electronic Assembler . .	5,850	5.40	5
All Other Assemblers	510	0.47	17
All Other Skilled Craft and Kindred Workers	770	0.71	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
All Other Semiskilled craft and Kindred Workers.	2,590	2.39	N/A
All Other Laborers	1,520	1.40	11
Clerical Occupations	18,510	17.10	N/A
Bookeeping/Billing Machine Operator	100	0.09	16
Computer Operator	730	0.67	4
Keypunch Operator	370	0.33	8
Peripheral EDP Equipment Operator .	270	0.24	6
All Other Office Machine Operator .	200	0.18	N/A
Stenographer.	180	0.16	11
Accounting Clerk	1,030	0.95	4
Bookkeeper, Hand	150	0.13	8
File Clerk	330	0.30	7
General Clerk Office.	1,750	1.61	4
Order Clerk	640	0.59	9
Payroll/Timekeeping Clerk	260	0.23	7
Personnel Clerk	230	0.20	5
Procurement Clerk	160	0.15	6
Receptionist.	70	0.06	10
Secretary	3,690	3.40	3
Statistical Clerk	110	0.10	10
Switchboard Operator	120	0.10	6
Switchboard Operator/Reception. . .	200	0.18	6
Typist.	530	0.49	10
Clerical Supervisor	300	0.27	11
All Other Office Clerical	1,570	1.44	N/A
Production Clerk/Coordinator. . . .	1,650	1.52	4
Shipping Packer	740	0.68	11
Shipping/Receiving Clerk	960	0.88	4
Stock Clerk, Stockroom	1,970	1.81	3
All Other Plant Clerical Workers. .	200	0.18	N/A
Sales Occupations.	1,890	1.75	N/A
Sales Representative	1,800	1.66	8
Sales Clerk	90	0.08	20
TOTAL	108,230	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
ENGINES AND TURBINES (SIC 351)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	680	10.43	2
Professional Occupations	1,040	15.95	N/A
Civil Engineers	20	0.23	11
Electrical/Electronic Engineer	90	1.40	2
Industrial Engineer	180	2.80	16
Mechanical Engineer	250	3.87	4
Metal Engineer	10	0.17	10
Chemist	10	0.17	10
Systems Analyst, Business	30	0.38	9
Purchasing Agent/Buyer	30	0.51	6
Accountants/Auditors	60	0.94	4
Commercial Artist	10	0.10	9
Cost Estimator	10	0.10	9
Writer/Editor	10	0.12	N/A
Nurse, Professional	10	0.15	4
Personnel/Labor Relations Specialist	50	0.73	7
Designer	260	4.01	2
All Other Professional Workers	10	0.06	N/A
Technical Occupations	160	2.45	N/A
Computer Programmer, Business	30	0.40	16
Drafter	50	0.73	29
Tool Programmer, Numerical Control	30	0.40	13
Industrial Engineering Technician	10	0.12	10
All Other Engineering Technicians	20	0.26	N/A
All Other Technicians	20	0.24	N/A
Service Occupations	130	1.99	N/A
Janitors, Porters, and Cleaners	80	1.18	8
Guards and Doorkeepers	40	0.60	11
All Other Service Workers	10	0.15	N/A
Maintenance and Production Occupations	3,710	56.90	N/A
Mechanic, Automotive	10	0.15	10
Mechanic, Maintenance	100	1.50	10
All Other Mechanics and Repairers	200	2.80	N/A
Truck Driver	30	0.38	6
Carpenter	50	0.71	9
Crane, Derrick, and Hoist Operator	60	0.93	6
Electrician	110	1.66	10
Filers, Grinders, Etc.	130	2.02	5

SIC 351 (con't.)

OCCUPATION	EMPLOYMENT Number	Percent	Relative Error Percent
Gear Cutting, Grinding Machine Opr.	80	1.27	10
Rigger	40	0.65	11
Industrial Truck Operator	40	0.56	5
Inspector	220	3.34	5
Machinist	280	4.42	10
Oiler	10	0.17	10
Painter, Maintenance	30	0.40	10
Plumber/Pipefitter	110	1.63	11
Sand/Shotblaster	20	0.34	8
Sheet Metal Worker	20	0.26	27
Stationary Boiler Firer	30	0.48	11
Stationary Engineer	10	0.18	7
Tool and Die Maker	30	0.40	9
Welders and Flamecutters	190	2.92	3
Drill-Press Operator	130	1.96	18
Grinding Machine Operator, Metal	130	2.00	6
Lathe Machine Operator, Metal	300	4.60	2
Lay-Out Marker, Metal	20	0.31	3
Machine Tool Operator, Combination	70	1.08	7
Machine Tool Operator, Numerical Control	160	2.45	7
Milling/Planing Machine Operator	180	2.80	6
Patternmaker, Metal	10	0.07	11
Sawyer, Metal	10	0.20	N/A
Tester	70	1.10	10
Woodworking-Machine Operator	10	0.15	34
Painter, Production	20	0.23	7
Punch-Press Setter, Metal	10	0.10	9
Shear/Slitter Setter	10	0.14	10
Coil Winder	20	0.34	10
Balancing-Machine Operator	10	0.18	11
Power Brake/Bending Machine	10	0.07	11
Machine Assembler	290	4.52	6
Electro-Mechanical Equipment Assembler	50	0.77	10
Electrical and Electronic Assembler	30	0.49	10
All Other Skilled Workers	150	2.37	N/A
All Other Semiskilled Workers	140	2.13	N/A
All Other Laborers	80	1.26	N/A
Clerical Occupations	780	11.96	N/A
Computer Operator	20	0.29	13
Keypunch Operator	40	0.54	5
Peripheral EDP Equipment Operator	10	0.20	32
All Other Office Machine Operators	60	0.91	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Stenographer	60	0.90	6
Accounting Clerk	30	0.48	9
General Clerk,Office	60	0.88	20
Payroll/Timekeeping Clerk . . .	10	0.12	4
Personnel Clerk	10	0.10	6
Secretary	110	1.74	10
Switchboard Operator	10	0.12	10
Typist	20	0.24	11
All Other Office Clerical Workers	50	0.81	N/A
Production Clerk/Coordinator . .	100	1.57	7
Shipping Packer	30	0.42	8
Stock Clerk, Stockroom	120	1.92	9
All Other Plant Clerical Workers	40	0.61	N/A
Sales Occupations	20	0.31	N/A
Sales Representatives	20	0.31	N/A
TOTAL	6,520	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
SPECIAL INDUSTRY MACHINERY (SIC 355)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	1,570	9.23	9
Professional Occupations	2,240	13.18	N/A
Electrical/Electronic Engineer	120	0.70	23
Industrial Engineer	190	1.11	20
All Other Engineers	980	5.75	N/A
Systems Analyst, Business	40	0.22	19
Systems Analyst, Scientific and Technical	20	0.09	27
Purchasing Agent/Buyer	120	0.71	22
Accountants/Auditors	200	1.14	17
Nurse, Professional	10	0.07	24
Personnel/Labor Relations Specialist	70	0.41	22
Designer	150	0.87	31
All Other Professional Workers	340	2.00	N/A
Technical Occupations	1,660	9.76	N/A
Computer Programmer, Business	60	0.36	23
Computer Programmer, Scientific and Technical	90	0.51	24
Drafter	340	2.01	26
Electrical/Electronic Technicians	690	4.03	20
Tool Programmer, Numerical Control	50	0.28	31
All Other Engineering Technicians	330	1.94	N/A
All Other Technicians	100	0.58	N/A
Service Occupations	270	1.59	N/A
Janitors, Porters & Cleaners	200	1.15	20
All Other Service Workers	70	0.43	N/A
Maintenance and Production Occupations	7,610	44.76	N/A
Refrigerator/Air Conditioner Mechanic	10	0.02	N/A
All Other Mechanics and Repairers	80	0.49	N/A
Truck Driver	40	0.21	21
Supervisor, Nonworking	400	2.31	12
Inspector	210	1.25	17
Drill Press Operator	360	2.09	22
Lathe Machine Operator, Metal	490	2.88	34
Milling/Planing Machine Operator	310	1.79	28
Punch Press Operator, Metal	30	0.16	18
Machine Assembler	780	4.56	19
Electrical/Electronic Assembler	570	3.32	19

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
All Other Skilled Workers	1,040	6.10	N/A
All Other Semiskilled Workers . .	2,240	13.14	N/A
All Other Laborers	1,050	6.16	N/A
Clerical Occupations	3,200	18.82	N/A
Computer Operator	60	0.34	23
Keypunch Operator	70	0.39	13
All Other Office Machine Operators	30	0.19	N/A
Accounting Clerk	210	1.23	18
File Clerk	80	0.46	32
General Clerk, Office	190	1.08	29
Order Clerk	100	0.58	28
Payroll/Timekeeping Clerk . . .	60	0.37	26
Personnel Clerk	40	0.24	31
Procurement Clerk	50	0.29	25
Secretary	460	2.71	16
Switchboard Operator	30	0.17	31
Typist	140	0.80	25
All Other Office Clerical Workers	800	4.68	N/A
Production Clerk/Coordinator . .	240	1.39	17
Shipping Packer	40	0.21	25
Shipping/Receiving Clerk	190	1.09	21
Stock Clerk, Stockroom	290	1.67	20
All Other Plant Clerical Workers	120	0.72	N/A
Sales Occupations	450	2.65	N/A
Sales Representatives	400	2.31	23
Sales Clerk	50	0.28	N/A
TOTAL	17,000	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
OFFICE, COMPUTING AND ACCOUNTING MACHINES (SIC 357)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	4,530	9.88	10
Professional Occupations	11,010	24.00	N/A
Electric & Electronic Engineer . .	2,610	5.68	19
Industrial Engineer.	1,550	3.37	15
Mechanical Engineer.	280	0.60	26
All Other Engineers.	370	0.78	N/A
All Other Natural and Mathematical Scientists.	40	0.06	N/A
Systems Analyst, Business.	580	1.26	30
Purchasing Agent/Buyer	310	0.67	10
Accountants/Auditors	1,010	2.19	15
Commercial Artist.	110	0.23	27
Cost Estimator	20	0.05	35
Writer/Editor	370	0.79	23
Nurse, Professional.	50	0.11	12
Personnel and Labor Relations Specialists	430	0.92	13
Designer	140	0.31	33
Contract Administrator	130	0.28	22
All Other Professional Workers . .	3,010	6.55	N/A
Technical Occupations.	5.970	13.02	N/A
Computer Programmer, Business. . .	1,020	2.21	17
Computer Programmer, Scientific and Technical.	990	2.15	33
Drafter.	340	0.73	14
Electrical & Electronic Technician	3,050	6.63	11
All Other Engineer Technicians . .	400	0.20	N/A
All Other Technicians.	170	0.87	N/A
Service Occupations.	660	1.44	N/A
Janitors, Porters & Cleaners . . .	370	0.79	12
Guards & Doorkeepers	270	0.59	19
Supervisors, Nonworking Service. .	20	0.04	N/A
Maintenance & Production Occupation.	13,830	30.15	N/A
Mechanic, Maintenance	190	0.41	11
All Other Mechanics & Repairers. .	330	0.73	N/A
Truck Driver	80	0.16	18
Carpenter.	40	0.08	24

SIC 357 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Electrician	90	0.20	12
Supervisor, Nonworking	1,080	2.34	13
Inspector	1,720	3.73	13
Machinist	150	0.33	30
Tester	1,360	2.95	31
Electrical and Electronic Assembler	6,640	14.44	17
All Other Assemblers	10	0.01	N/A
All Other Skilled Craft and Kindred Workers	470	1.02	N/A
All Other Semiskilled Craft and Kindred Workers	1,110	2.44	N/A
All Other Laborers	530	1.12	N/A
Clerical Occupations	9,420	20.54	N/A
Computer Operator	570	1.23	12
Keypunch Operator	110	0.23	25
Peripheral EDP Equipment Operator	240	0.51	18
All Other Office Machine Operato Operators	70	0.14	N/A
Accounting Clerk	550	1.19	15
Bookkeeper, Hand	60	0.11	29
File Clerk	170	0.36	30
General Clerk, Office	820	1.79	18
Order Clerk	260	0.56	26
Payroll/Timekeeping Clerk	50	0.10	21
Personnel Clerk	130	0.27	22
Procurement Clerk	60	0.12	22
Receptionist	30	0.07	28
Secretary	2,240	4.86	10
Statistical Clerk	70	0.16	34
Switchboard Operator	70	0.14	23
Switchboard Operator/Receptionist	60	0.12	23
Typist	140	0.29	29
Clerical Supervisor	140	0.29	24
All Other Office Clerical	840	1.84	N/A
Production Clerk/Coordinator	900	1.94	18
Shipping Packer	310	0.67	26
Shipping/Receiving Clerk	490	1.07	17
Stock Clerk, Stockroom	1,150	2.49	14
All Other Plant Clerical	10	0.03	N/A
Sales Occupations	450	0.98	N/A
Sales Representative	450	0.98	41
Total	45,870	100.00	N/A

N/A Relative Error Not Available   Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
MISC. MACHINERY, EXCEPT ELECTRICAL (SIC 359)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	580	8.42	4
Professional Occupations	280	4.06	N/A
Civil Engineer	20	0.21	44
Electrical & Electronic Engineer	20	0.30	30
Industrial Engineer	50	0.79	15
Mechanical Engineer	40	0.54	18
Purchasing Agent/Buyer	40	0.51	10
Accountants/Auditors	60	0.82	16
Cost Estimator	10	0.16	11
Personnel & Labor Relations Specialists	10	0.11	13
Designer	10	0.07	11
All Other Professional Workers	20	0.23	N/A
Technical Occupations	130	1.89	N/A
Computer Programmer, Business	10	0.16	14
Computer Programmer, Scientific and Technical	10	0.08	34
Drafter	60	0.87	23
Electrical & Electronic Technician	10	0.17	25
Mechanical Engineer Technician	10	0.11	21
Tool Programmer, Numerical Control	20	0.30	14
All Other Engineer Technicians	10	0.16	N/A
Service Occupations	80	1.16	N/A
Janitors. Porters & Cleaners	80	0.16	N/A
Maintenance & Production Occupations	5,000	72.57	N/A
Mechanic, Maintenance	20	0.32	29
Truck Driver	30	0.38	26
Delivery & Route Workers	10	0.11	42
Electrician	40	0.58	34
Filers, Grinders, Buffers, Chipper Cleaners/Polishers	90	1.30	13
Supervisor, Nonworking	170	2.44	10
Gear Cutting/Grinding/Gear Shaping Machine Operator	10	0.08	N/A
Industrial Truck Operator	40	0.51	16
Inspector	190	2.72	9
Machinist	450	6.65	18

OCCUPATION	EMPLOYMENT Number	Percent	Relative Error Percent
Maintenance Repairer, General Utility	10	0.11	9
Helper, Trades	10	0.08	27
Painter, Maintenance	10	0.07	31
Plumber/Pipefitter	20	0.26	43
Tool & Die Maker	180	2.63	22
Welders & Flamecutters	140	1.99	18
Drill-Press Operators	210	3.12	13
Grinding Machine Operator, Metal	170	2.47	13
Lathe Machine Operator, Metal	460	6.78	11
Machine Tool Operator, Combination	670	9.81	13
Machine Tool Operator, Numerical Control	560	8.24	13
Machine Tool Operator, Toolroom	90	1.31	18
Machine Tool Setter, Metal	170	2.52	15
Milling/Planning Machine Operator	380	5.56	17
Plater, Helper	10	0.13	5
Sawyer, Metal	10	0.08	16
Tester	10	0.19	12
Painter, Production	40	0.64	46
Punch-Press Operator, Metal	30	0.42	20
Punch-Press Setter, Metal	10	0.07	22
Compression/Injection Molding Machine Operator Plastics	10	0.16	N/A
Dip Plater, Non-Electrolytic	10	0.07	N/A
Power Brake/Bending Machine Operator, Metal	10	0.19	N/A
Machine Assembler	220	3.16	32
Electrical/Electronic Assemblers	30	0.36	35
All Other Assemblers	100	1.41	N/A
All Other Skilled Craft and Kindred Workers	70	1.07	N/A
All Other Semiskilled Craft and Kindred Workers	280	4.12	N/A
All Other Laborers	30	0.47	N/A
Clerical Occupations	660	9.58	N/A
Keypunch Operators	10	0.11	6
All Other Office Machine Operators	10	0.13	N/A
Stenographers	10	0.08	34
Accounting Clerk	20	0.26	8
Bookkpeeper, Hand	10	0.17	20
General Clerk, Office	180	2.60	11
Payroll/Timekeeping Clerk	20	0.21	15
Secretary	130	1.87	10
Switchboard Operator/Receptionist	10	0.11	16

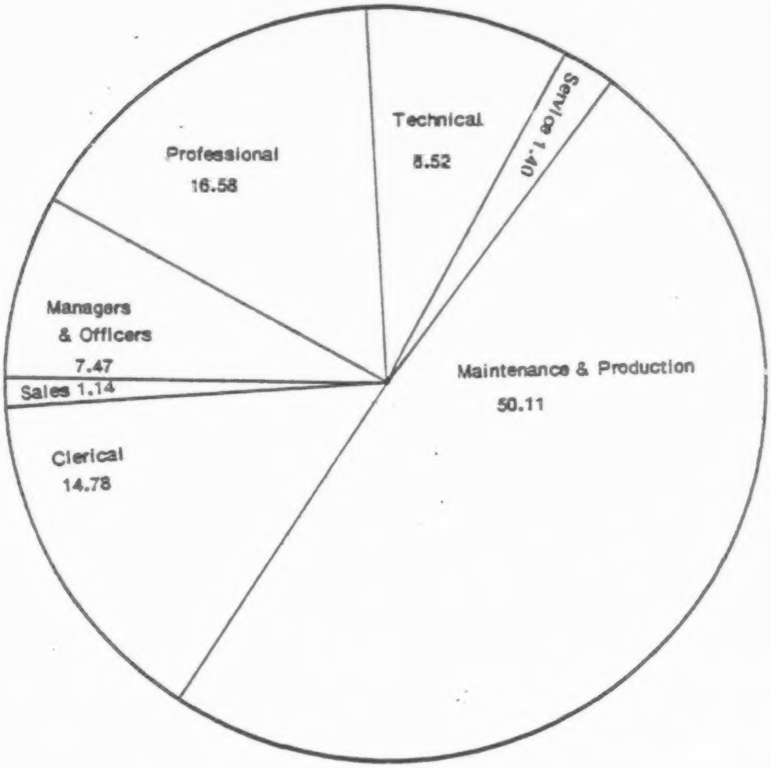
OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Typist	20	0.27	6
All Other Office Clerical	60	0.85	N/A
Production Clerk/Coordinator	40	0.57	17
Shipping Packer	30	0.43	28
Shipping/Receiving Clerk	40	0.63	23
Stock Clerk, Stockroom	70	0.96	13
Sales Occupations	160	2.32	N/A
Sales Representative	150	2.15	13
Sales Clerk	10	0.20	N/A
TOTAL	6,890	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

ELECTRICAL AND ELECTRONIC MACHINERY, EQUIPMENT, AND SUPPLIES (SIC 36)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	Electrical and Electronic Assembler	11,340
2.	Managers and Officers	8,460
3.	Electrical and Electronic Engineers	7,220
4.	All Other Semiskilled Workers	6,760
5.	All Other Laborers and Unskilled Workers	6,020
6.	Electrical and Electronic Technicians	5,200
7.	All Other Assemblers	4,950
8.	Electro-Mechanical Equipment Assembler	4,680
9.	Secretary	3,560
10.	Inspector	2,920

These 10 occupational categories make up 54% of total industry employment.

SIC

36

This major group includes establishments engaged in manufacturing machinery, apparatus and supplies for the generation, storage, transmission, transformation and utilization of electrical energy.

Along with nonelectric machinery (SIC 35), the electrical machinery group is one of the largest and fastest growing manufacturing sectors, not only in Massachusetts, but also in such key industrial states as California, Texas and Florida. Employment in this sector in Massachusetts has increased from 91,000 in 1977 to 109,400 in 1980. Employment is expected to continue growing at a faster pace than the trained and experienced workers in key occupations. Those key occupations - technicians, systems analyst and engineers - often require between two and six years of education. This shortage is expected to continue in Massachusetts and elsewhere.

This rapid growing sector is composed of the following major specific 3-digit industries.[1]

		Employment(in Thous.)	
SIC	Industry	1977	1980
36	Electrical Machinery	91.0	109.4
366	Communication Equipment	25.0	32.8
367	Electronic Components and Accessories	35.8	47.3

This table clearly shows communication equipment (SIC 366) and electronic components and accessories (367) dominate this sector with their 73 percent share of total employment. These two industries are two of the major components of the "high-technology" industry.

The most striking feature of this industry's occupational profile is its comparatively low level of production and maintenance workers (50 percent), similar to nonelectrical machinery's 46.9 percent share. Nondurable goods industries average 70 percent, while other durable goods industries average 60 percent. This lower production and maintenance occupation share is offset by higher shares of professional (16.6 percent) and technical (8.5 percent) workers.

[1] Other industries in this group include SIC 361, electrical transmission & distribution equipment; SIC 362, electrical industrial apparatus; SIC 364, electrical lighting and wiring equipment; and SIC 365, radio and television receiving equipment.

Seven occupational categories account for 53 percent of production worker employment: inspector (2900), tester (2200), nonworking supervisor (2700), electro-mechanical equipment assembler (4700), electrical and electric assembler (11,300), all other assemblers (6000), and coil winder (1200).

The increased share of professional workers is due to increases in the level of engineers, especially electrical and electronic engineers (7200) and industrial engineers (1800). Engineers account for 48 percent of the professional category. Systems analyst is another major occupation among professional workers in this industry, accounting for 7 percent of this category's employment. In the technical occupations, electrical and electronic technicians (5200) represent more than half (54 percent) of all workers. Drafter (1600) is another major technical occupation in this industry group.

While there is a diversity of occupations within electrical equipment and supplies, a large part of the employment is concentrated in only a few occupations. There are more than 100 occupational categories in this sector, yet over 40 percent of the employment is within only eleven occupational categories. This concentration is especially noticeable in the two major industries comprising the group - communications equipment (SIC 366) and electronic components and accessories (SIC 367).

Communication Equipment (SIC 366)

Establishments in this industry group are primarily engaged in manufacturing telecommunications equipment. Employment in this industry has increased from 25,000 in 1977 to 32,800 in 1980 and is expected to continue to grow in the near future with expansion in the telecommunications field. The occupational profile of this industry is similar to other "high technology" industries - a greater share of professional and technical workers with a correspondingly smaller share of production workers.

Employment is concentrated among nine occupational categories: engineers (4100), systems analysts (700), technicians (2000), drafters (800), inspectors (1400), testers (1000), assemblers (4700), nonworking supervisors (900), and coil winders (400). These occupations account for almost half the employment in this industry.

Engineers account for a larger employment share than the industry group (14 percent versus 9.4 percent); similarly, drafters represent a larger share (10 percent versus 6 pcreent). Assemblers, on the other hand, account for only a 14 percent share whereas the industry norm is 19 percent.

These differences suggest a greater proportion of professional workers and at the same time a smaller proportion of production workers. The survey results bear this out. The communication equipment industry has a 20.5 percent professional worker share versus a 16.6 percent share for the industry group as a whole. In addition, the production worker employment share is less than the industry norm (46 percent versus 50.1 percent).

Since the 1977 survey period, professional workers have increased by 750; engineers account for 600 of that total. Most of the growth in technical occupations occurred in drafters (+300) and electrical/electronic technicians (+600).

Electronic Components and Accessories (SIC 367)

This industry has grown from 35,800 workers in 1977 to an annual average 47,300 workers in 1980. This industry is a major component of the "high technology sector", manufacturing semiconductors, cathode ray tubes and other electronic components vital to machinery and instruments produced by other high technology companies. Employment within this industry is also concentrated among a few occupations, many of them the same major occupations found in communications equipment. In addition, the major occupational categories possess similar shares of employment. For example, professional workers comprise 19.1 percent of total employment in electronic components and 20.5 percent in communications equipment. Similarly, technical workers account for 11 percent and 9.2 percent respectively. Differences, however, occur within the production worker category; this industry has a 41.8 percent share of total employment as opposed to 46 percent in communications equipment. This difference occurs in most occupational categories except assemblers, where electronic components have a 39 percent share versus only 31 percent in communications equipment.

While some of the growth in electrical machinery in recent years has occurred as part of this state's recovery from the severe recession of 1975, expansion in the last three years is due to the rapid growth of the "high technology" sector.

Electric Lighting and Wiring Equipment (SIC 364)

Establishments in this industry manufacture electric bulbs and tubes, wiring devices, and residential, commercial and vehicular lighting fixtures. This is a relatively small industry, representing less than eight percent of electric and electronic equipment employment. While this industry falls under the umbrella of "high technology" because of its location in electrical machinery, this is not an industry possessing high technology characteristics, especially its occupational structure.

"High technology" industries have been characterized by high levels of professional and technical workers (e.g. E & E engineers, E & E technicians, system analysts) and below average levels of production workers (less than 60 percent). By its employment structure, this industry appears to resemble a nondurable goods industry rather than a "high technology" industry. The level of professional(4 percent) and technical (2 percent) employment, along with a 79 percent production worker share, give this industry an appearance of an old, established consumer industry such as food (SIC 20) or leather (SIC 31). The key difference is in their percentage of engineers, accounting for over half the professional employment.

OCCUPATIONS OF EMPLOYEES
ELECTRICAL EQUIPMENT AND SUPPLIES (SIC 36)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	8,460	7.47	6
Professional Occupations	18,780	16.58	N/A
Chemical Engineer	70	0.05	25
Electrical & Electronic Engineer	7,220	6.37	15
Industrial Engineer	1,850	1.63	11
Mechanical Engineer	770	0.68	14
Metal Engineer	50	0.04	21
All Other Engineers	800	0.70	16
Mathematician	10	0.00	27
Statistician	10	0.00	78
Chemist	50	0.04	31
Physicist	30	0.02	32
All Other Natural/Mathematical Scientists	10	0.00	21
Systems Analyst, Scientific and Technical	350	0.30	15
Purchasing Agent/Buyer	820	0.72	9
Accountants/Auditors	1,520	1.34	17
Commerical Artist	320	0.27	34
Cost Estimator	310	0.27	22
Lawyer	30	0.03	31
Nurse, Professional	120	0.10	12
Personnel & Labor Relations Specialists	670	0.58	27
Designer	380	0.33	11
Contract Administrator	220	0.19	14
All Other Professor Workers	3,170	2.99	31
Technical Occupations	9,650	8.52	N/A
Computer Programmer, Scientific and Technical	210	0.18	35
Drafter	1,630	1.44	6
Electrical & Electronic Technician	5,200	4.59	9
Mechanical Engineer Technician	730	0.64	14
Tool Programmer, Numerical Control	30	0.02	31
Industrial Engineer Technician	150	0.13	8
All Other Engineer Technicians	220	0.19	8
All Other Technicians	1,480	1.40	82

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Service Occupations	1,580	1.40	N/A
Janitors, Porters & Cleaners	810	0.71	9
Guards & Doorkeepers	570	0.50	16
Food Service Workers	50	0.04	26
Supervisor, Nonworking, Service	120	0.10	25
All Other Service Workers	30	0.02	23
Maintenance & Production Occupation	56,760	50.11	N/A
Mechanic, Automotive	20	0.01	20
Electric-Motor Repairer	10	0.01	9
Electrical Instrument Repairer	120	0.10	25
Mechanic, Maintenance	850	0.75	12
All Other Mechanics & Repairers	120	0.10	32
Truck Driver	80	0.07	16
Carpenter	110	0.09	23
Crane, Derrik/Hoist Operator	60	0.04	N/A
Electrician	510	0.44	11
Filers, Grinders, Buffers, Chippers Cleaners/Polishers	130	0.11	10
Supervisor, Nonworking	2,750	2.43	8
Rigger	10	0.00	N/A
Industrial Truck Operator	280	0.24	17
Inspector	2,920	2.57	5
Instrument Repairer	30	0.02	10
Machinist	960	0.84	13
Maintenance Repairer, General Utility	330	0.29	18
Helpers, Trades	150	0.12	14
Millwright	200	0.17	17
Order Filler	340	0.30	13
Painter, Maintenance	50	0.04	12
Pourer, Metal	10	0.00	14
Electroplater	260	0.23	19
Plumber/Pipefitter	130	0.11	17
Press Operator/Plate Printer	50	0.04	19
Production Packager	540	0.47	8
Sheet Metal Worker	270	0.24	16
Stationay Boiler Firer	30	0.02	21
Stationary Engineer	60	0.05	15
Tool and Die Maker	790	0.69	6
Welders and Flamecutters	740	0.64	17
Die Setter	40	0.03	8
Drill-Press Operator	160	0.14	11
Heat Treater, Annealer	70	0.06	24
Lathe Machine Operator, Metal	410	0.36	18
Machine Tool Operatio, Combination	480	0.42	10

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Machine Tool Operator, Numerical Control.	350	0.30	20
Machine Tool Operator, Toolroom .	190	0.17	15
Machine Tool Setter, Metalworking	140	0.12	13
Milling Planing Machine Operator.	150	0.12	31
Molder, Bench/Floor	10	0.00	N/A
Molder, Machine	60	0.05	28
Patternmaker, Metal	30	0.02	17
Sawyer, Metal	30	0.02	15
Tester	2,240	1.97	14
Painter, Production	550	0.48	10
Di-Cast Machine Operator-Setter .	50	0.04	9
Wirer, Electronic.	1,440	1.27	11
Riveter, Light	40	0.03	35
Punch-Press Operator, Metal . . .	490	0.43	9
Shear/Slitter Operator, Metal . .	20	0.01	31
Shear/Slitter Setter	10	0.01	5
Coil Winder	1,240	1.09	13
Coil Taper, Hand/Machine	30	0.02	28
Conveyor Operator/Tender	30	0.02	17
Power Brake/Bending Machine Operator, Metal	60	0.04	14
Screen/Stencil Printer/Setter . .	170	0.14	26
Electro-Mechanical Equipment Assembler	4,680	4.13	13
Electrical & Electronic Assembler	11,340	5.82	7
All Other Assemblers	4,950	2.32	10
Mixer/Blender, Chemicals and Chemical Products	90	0.07	28
All Other Skilled Craft and Kindred Workers	1,510	1.33	13
All Other Semiskilled Craft and Kindred Workers	6,760	5.97	20
All Other Laborers	6,030	5.32	10
Clerical Occupations	16,740	14.78	N/A
Bookkeeping/Billing Machine Operator	80	0.06	25
Computer Operator	600	0.53	23
Keypunch Operator	440	0.39	6
Peripheral EDP Equipment Operator	330	0.28	27
All Other Office Machine Operator	120	0.10	18
Stenographer	490	0.43	8
Accounting Clerk	930	0.82	11
Bookkeeper, Hand	320	0.28	21

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
File Clerk	110	0.09	22
General Clerk, Office	1,140	1.00	11
Order Clerk	510	0.44	22
Payroll/Timekeeping Clerk . . .	290	0.25	7
Personnel Clerk	270	0.23	15
Procurement Clerk	180	0.15	12
Receptionist	80	0.06	13
Secretary.	3,560	3.14	27
Switchboard Operator	110	0.09	14
Switchboard Operator/Receptionist	180	0.15	10
Typist	860	0.76	5
Clerical Supervisor	290	0.25	16
All Other Office Clerical . . .	1,780	1.48	14
Production Clerk/Coordinator . .	1,540	1.36	13
Shipping Packer	560	0.49	7
Shipping/Receiving Clerk	620	0.54	7
Stock Clerk, Stockroom	1,170	1.03	6
All Other Plant Clerical	180	0.15	25
Sales Occupations	1,290	1.14	N/A
Sales Representative	1,120	0.98	11
Sales Clerk	170	0.15	24
TOTAL	113,260	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
ELECTRICAL DISTRIBUTION EQUIPMENT (SIC 361)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	360	6.35	10
Professional Occupations	680	12.00	N/A
Chemical Engineer.	10	0.15	N/A
Electrical & Electronic Engineer .	230	4.08	29
Industrial Engineer.	20	0.31	29
Mechanical Engineer.	30	0.49	32
Metal Engineer	10	0.10	N/A
All Other Engineers.	10	0.14	N/A
Chemist.	10	0.21	N/A
System Analyst, Business	20	0.35	10
Purchasing Agent/Buyer	30	0.60	31
Accountants/ Auditors.	30	0.53	16
Cost Estimator	10	0.24	17
Nurse, Professional.	10	0.10	18
Personnel & Labor Relations Specialists	20	0.26	26
Designer	110	1.85	24
All Other Professional Workers . .	130	2.25	N/A
Technical Occupations.	260	4.56	N/A
Computer Programmer, Business. . .	10	0.10	18
Drafter.	90	1.66	38
Electrical & Electronic Technicians	50	0.81	42
Industrial Engineering Technician.	30	0.51	N/A
All Other Engineering Technicians.	60	1.04	N/A
Science Technicians.	20	0.34	N/A
All Other Technicians.	30	0.57	N/A
Service Occupations.	130	2.29	N/A
Janitors, Porters & Cleaners . . .	70	1.16	9
Guards & Doorkeepers	40	0.65	21
All Other Service Workers.	20	0.37	N/A
Maintenance & Production Occupations	3,620	63,84	N/A
Mechanic, Maintenance.	70	1.25	2
All Other Mechanics & Repariers. .	60	1.03	N/A
Truck Driver	10	0.19	10
Carpenter.	10	0.15	12
Crane, Derrick/Hoist Operator. . .	50	0.88	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Electrician	130	2.22	47
Filer, Grinders, Buffers, Chippers Cleaners/Polishers	30	0.53	N/A
Supervisor, Nonworking	150	2.56	13
Industrial Truck Operator	30	0.58	N/A
Inspector	100	1.82	22
Instrument Repairer	10	0.08	48
Maintenance Repairer, General Utility	10	0.21	34
Millwright	10	0.08	N/A
Order Filler	120	2.14	N/A
Painter, Maintenance	10	0.08	N/A
Plumber/Pipefitter	30	0.46	N/A
Production Packager	30	0.49	N/A
Sheet Metal Worker	60	1.06	28
Stationary Boiler Firer	10	0.14	N/A
Stationary Engineer	30	0.44	4
Tool & Die Maker	80	1.39	13
Welders and Flamecutters	180	3.25	10
Die Setter	10	0.08	47
Drill-Press Operator	40	0.65	N/A
Heat Treater, Annealer	50	0.86	10
Lathe Machine Operator, Metal	130	2.21	6
Machine Tool Operator, Numberical Control	10	0.24	N/A
Milling/Planing Machine Operator	20	0.37	N/A
Plater Helper	10	0.17	11
Sawyer, Metal	20	0.26	N/A
Tester	140	2.51	6
Painter, Production	50	0.86	24
Punch-Press Operator, Metal	80	1.36	N/A
Shear/Slitter Setter	10	0.21	20
Coil Winder	240	4.21	24
Dip Plater, Non-Electrolytic	10	0.15	N/A
Machine Assembler	20	0.33	N/A
Electro-Mechanical Equipment Assembler	440	7.80	21
All Other Assemblers	570	10.00	N/A
All Other Skilled Craft and Kindred Workers	60	1.01	N/A
All Other Semiskilled Craft and Kindred Workers	440	7.78	N/A
All Other Laborers	110	1.77	N/A
Clerical Occupations	580	10.23	N/A
Computer Operator	20	0.28	25
Keypunch Operator	30	0.51	31
All Other Office Machine Operators	10	0.15	N/A
Stenographer	20	0.30	28

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Accounting Clerk	10	0.24	30
General Clerk, Office	90	1.59	10
Payroll/Timekeeping Clerk	20	0.42	20
Secretary	120	2.05	21
Typist	10	0.19	45
All Other Office Clerical	80	1.15	N/A
Production Clerk/Coordinator	70	1.20	7
Shipping Packer	20	0.42	43
Shipping/Receiving Clerk	20	0.42	48
Stock Clerk, Stockroom	60	1.11	12
Sales Occupations	40	0.71	N/A
Sales Representative	40	0.71	N/A
TOTALS	5,670	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
ELECTRICAL INDISTRIAL APPARATUS (SIC 362)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	130	2.23	N/A
Professional Occupations	310	5.33	N/A
Electric & Electronic Engineer . .	70	1.22	16
Industrial Engineer.	30	0.43	31
Mechanical Engineer.	60	1.10	25
Systems Analyst, Business.	30	0.48	28
Purchasing Agent/Buyer	50	0.86	34
Accountants/Auditors	30	0.50	25
Personnel & Labor Relations Specialists	20	0.27	23
All Other Professional Workers . .	20	0.34	N/A
Technical Occupations	130	2.23	N/A
Drafter.	50	0.79	31
Electrical & Electronic Technicians	50	0.89	18
Industrial Engineering Technicians	20	0.34	47
All Other Engineering Technicians.	10	0.10	N/A
All Other Technicians.	10	0.14	N/A
Service Occupations.	60	1.03	N/A
Janitors, Porters & Cleaners . . .	30	0.56	19
Guards & Doorkeepers	10	0.13	42
Food Service Workers	20	0.27	42
Maintenance & Production Occupations	4,550	78.18	N/A
All Other Mechanics & Repairers .	10	0.19	N/A
Electrician.	30	0.50	25
Instrument Repairer	10	0.22	43
Millwright	10	0.15	25
Plumber/Pipefitter	10	0.08	44
Tool and Die Maker	150	2.55	39
Electrical/Electronic Assemblers .	3,010	51.84	37
All Other Assemblers	850	14.75	N/A
All Other Skilled Craft and Kindred Workers	140	2.38	N/A
All Other Semiskilled Craft and Kindred Workers	260	4.40	N/A
All Other Laborers	70	1.17	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Clerical Occupations.	580	9.97	N/A
Computer Operator	40	0.72	30
Keypunch Operator	20	0.32	40
Accounting Clerk	40	0.63	20
General Clerk, Office	40	0.65	18
Order Clerk	40	0.65	12
Payroll/Timekeeping Clerk	10	0.20	46
Procurement Clerk	10	0.12	38
Secretary	70	1.22	13
Switchboard Operator	10	0.13	30
Typist.	30	0.43	15
All Other Office Clerical	90	1.52	N/A
Shipping Packer	40	0.72	35
Shipping/Receiving Clerk	40	0.65	40
All Other Plant Clerical Workers. . .	100	1.64	N/A
Sales Occupations	60	1.03	N/A
Sales Representative.	50	0.93	N/A
Sales Clerk	10	0.20	N/A
TOTALS	5,820	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
ELECTRICAL LIGHTING AND WIRING EQUIPMENT (SIC 364)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	420	5.13	19
Professional Occupations	360	4.40	N/A
Electric/Electronic Engineers. . .	80	0.92	24
Industrial Engineer.	50	0.61	15
Mechanical Engineer.	50	0.64	23
All Other Engineers.	10	0.14	31
Purchasing Agent/Buyer	60	0.67	19
Accountants/Auditors	30	0.41	18
Cost Estimator	10	0.06	48
Nurse, Professional.	10	0.12	18
Personnel and Labor Relations Specialists	20	0.24	15
Designer	20	0.19	22
All Other Professional Workers . .	10	0.16	26
Technical Occupations.	130	1.59	N/A
Computer Programmer, Business. . .	10	0.06	30
Drafter.	50	0.56	29
Electrical & Electronic Technici Technician.	20	0.19	48
Mechanical Engineering Technician.	10	0.17	45
Industrial Engineering Technician.	20	0.19	39
All Other Engineering Technicians	10	0.17	N/A
All Other Technicians.	20	0.23	N/A
Service Occupations.	110	1.34	N/A
Janitors, Porters & Cleaners . . .	80	1.01	17
Guards & Doorkeepers	20	0.26	16
Maintenance & Production Occupations	6,420	78.39	N/A
Electric-Motor Repairer.	10	0.09	42
Mechanic, Maintenance	190	2.31	19
Truck Driver	10	0.08	23
Electrician	50	0.65	32
Supervisor, Nonworking	230	2.75	21
Industrial Truck Operator.	120	1.46	17
Inspector.	150	1.76	21
Machinist.	70	0.89	37
Maintenance Repairer, General Utility	20	0.19	28

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Pourer, Metal	10	0.07	46
Electroplater	100	1.22	43
Production Packager	320	3.89	14
Tool and Die Maker	110	1.35	24
Die Setter	20	0.28	36
Drill-Press Operator	30	0.40	31
Lathe Machine Operator, Metal	10	0.06	44
Machine Tool Operator, Combination	20	0.19	45
Machine Tool Operator, Toolroom	30	0.31	40
Machine Tool Setter, Metal	30	0.34	39
Sawyer, Metal	10	0.06	38
Tester	30	0.34	41
Die-Cast Machine Operator/Setter	40	0.45	27
Punch-Press Operator, Metal	300	3.69	38
Punch-Press Setter, Metal	50	0.65	41
Dip Plater, Non-Electrolytic	10	0.06	48
Power Brake/Bending Machine Operator, Metal	30	0.36	40
Machine Assembler	100	1.18	41
Instrument Maker/Assembler	20	0.24	38
Electro-Mechanical Equipment Assembler	280	3.36	33
All Other Assemblers	650	7.94	N/A
Mixer/Blender, Chemicals and Chemical Products	20	0.28	40
All Other Skilled Craft and Kindred Workers	240	2.94	N/A
All Other Semiskilled Craft and Kindred Workers	870	10.67	N/A
All Other Laborers	2,290	27.93	N/A
Clerical Occupations	680	8.30	N/A
Computer Operator	10	0.17	31
Keypunch Operator	10	0.12	28
Peripheral EDP Equipment Operator	10	0.08	44
Stenographer	20	0.19	43
Accounting Clerk	60	0.72	16
Bookkeeper, Hand	10	0.13	44
File Clerk	10	0.06	40
General Clerk, Office	40	0.53	22
Order Clerk	40	0.51	23
Payroll/Timekeeping Clerk	20	0.28	13
Personnel Clerk	10	0.13	30
Procurement Clerk	10	0.10	44
Secretary	80	0.98	14

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Statistical Clerk	10	0.12	46
Switchboard Operator/Receptionist	20	0.23	22
Typist	30	0.30	28
Clerical Supervisor	20	0.25	24
All Other Office Clerical	10	0.15	N/A
Production Clerk/Coordinator	90	1.03	6
Shipping Packer	80	0.91	21
Shipping/Receiving Clerk	40	0.52	22
Stock Clerk, Stockroom	40	0.53	13
All Other Plant Clerical	10	0.09	N/A
Sales Occupations	70	0.85	N/A
Sales Representative	70	0.79	36
Sales Clerk	10	0.07	36
TOTALS	8,190	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
COMMUNICATIONS EQUIPMENT (SIC 366)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	2,170	6.53	31
Professional Occupations	6,790	20.43	N/A
Electric & Electronic Engineer .	3,060	9.19	25
Industrial Engineer.	710	2.13	43
Mechanical Engineer.	320	0.96	29
All Other Engineers.	650	1.96	N/A
All Other Natural & Mathematical Scientists.	30	0.09	N/A
Systems Analyst, Business. . . .	170	0.52	20
Purchasing Agent/Buyer	210	0.64	17
Accountants/Auditors	340	1.03	20
Commercial Artist.	60	0.18	47
Cost Estimator	40	0.13	50
Writer/Editor	130	0.39	42
Lawyer	10	0.03	42
Nurse, Professional	30	0.07	11
Personnel and Labor Relations Specialists	130	0.39	25
Designer	80	0.22	44
All Other Professional Workers .	820	2.46	N/A
Technical Occupations.	3.050	9.18	N/A
Computer Programmer, Business. .	110	0.34	39
Computer Programmer, Scientific and Technical	90	0.27	37
Drafter.	790	2.37	10
Electrical & Electronic Technicians	1,730	5.20	19
Mechanical Engineering Technician	200	0.60	26
All Other Engineering Technicians	100	0.30	N/A
All Other Technicians.	30	0.08	N/A
Service Occupations.	440	1.32	N/A
Janitors, Porters & Cleaners . .	190	0.57	34
Guards & Doorkeepers	200	0.60	22
Supervisor, Nonworking Service .	30	0.07	26
All Other Service Workers. . . .	20	0.06	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Maintenance & Production Occupations	15,230	45.83	N/A
Mechanic, Maintenance	110	0.33	16
All Other Mechanics and Repairers	100	0.29	42
Truck Driver	10	0.03	41
Carpenter	40	0.12	32
Electrician	100	0.29	10
Supervisor, Nonworking	930	2.81	24
Inspector	1,360	4.09	21
Machinist	300	0.90	20
Maintenance Repairer, General Utility	60	0.17	28
Order Filler	130	0.37	46
Painter, Maintenance	20	0.06	27
Plumber/Pipefitter	60	0.19	28
Press Operator/Plate Printer	40	0.12	50
Production Packager	20	0.06	43
Sheet Metal Worker	140	0.42	26
Stationary Boiler Firer	10	0.03	42
Stationary Engineer	20	0.05	29
Tool and Die Maker	250	0.75	18
Drill-Press Operator	10	0.03	44
Etcher/Engraver	20	0.05	49
Lathe Machine Operator. Metal	30	0.08	45
Machine Tool Operator, Numerical - Control	90	0.27	35
Machine Tool Operator, Toolroom	50	0.15	27
Tester	980	2.94	22
Painter, Production	70	0.21	29
Wirer, Electronic	890	2.68	24
Punch-Press Operator, Metal	20	0.06	37
Coil Winder	420	1.27	40
Screen-Stencil Printer/Setter	70	0.20	16
Electro-Mechanical Equipment Assembler	2,390	7.19	35
Electrical and Electronic Assembler	2,040	6.14	27
All Other Assemblers	300	0.90	11
All Other Skilled Craft and Kindred Workers	1,120	3.37	N/A
All Other Semiskilled Craft and Kindred Workers	1,610	4.86	N/A
All Other Laborers	1,420	4.26	N/A
Clerical Occupations	5,340	16.07	N/A
Computer Operator	80	0.24	26
Keypunch Operator	180	0.54	8
All Other Office Machine Operators	100	0.30	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Stenographer	440	1.31	29
Accounting Clerk	240	0.72	13
Bookkeeper, Hand	30	0.09	38
File Clerk	20	0.06	43
General Clerk, Office	220	0.06	41
Order Clerk	40	0.12	36
Payroll/Timekeeping Clerk	50	0.14	19
Personnel Clerk	40	0.13	26
Procurement Clerk	50	0.13	45
Receptionist	10	0.03	40
Secretary	560	1.68	28
Statistical Clerk	20	0.05	35
Switchboard Operator	30	0.07	33
Switchboard Operator/Receptionist	60	0.16	31
Typist	450	1.36	17
Clerical Supervisor	120	0.36	22
All Other Office Clerical	1,250	3.76	N/A
Production Clerk/Coordinator	470	1.41	19
Shipping Packer	170	0.49	22
Shipping/Receiving Clerk	120	0.35	22
Stock Clerk, Stockroom	490	1.46	12
All Other Plant Clerical	100	0.29	N/A
Sales Occupations	210	0.63	N/A
Sales Representative	200	0.59	42
Sales Clerk	10	0.02	N/A
TOTALS	33,230	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
ELECTRONIC COMPONENTS AND ACCESSORIES (SIC 367)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent 1/
Managers and Officers.	4,500	8.98	N/A
Professional Occupations	10,000	19.96	N/A
Engineers	4,400	8.78	N/A
Purchasing Agent/Buyer	350	0.72	-
Accountants/Auditors	1,000	1.99	-
All Other Professional Workers . .	4,250	8.38	N/A
Technical Occupations	5,500	10.90	N/A
Comp., Prog., Bus., Sci., & Tech.	750	1.48	N/A
Drafter.	580	1.13	-
Electrical & Electronic Technician Technicians	3,140	6.20	-
All Other Technicians.	1,030	2.06	N/A
Service Occupations.	700	1.39	N/A
Maintenance & Production Occupations	20,400	40.72	N/A
Mechanic, Maintenance.	440	0.87	-
Supervisor, Nonworking	1,100	2.19	-
Inspector	1,100	2.19	-
Machinist	480	0.96	-
Tool & Die Maker	170	0.34	-
Assemblers	9,000	17.96	N/A
All Other Maintenance and Production Workers	8,100	16.17	N/A
Clerical Occupations	8,400	16.77	N/A
Office Machine Operators	950	1.90	N/A
Office Clerical.	5,700	11.38	N/A
Plant Clerical	1,750	3.49	N/A
Sales Occupations	600	1.20	N/A
TOTALS	50,100	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

1/ While response levels met accepted criteria, relative errors were generally too high to publish detailed occupational employment. Because of the importance of this industry, certain detailed occupational employment was included even when relative errors were somewhat above normally publishable criteria. In other instances, multiple detailed occupations were published together.

TRANSPORTATION EQUIPMENT

SIC 371, 372, 373

The industry group, transportation equipment (SIC 37), includes establishments engaged in the manufacture of equipment for the transportation of passengers and cargo by land, air, and water. Nationally, this industrial segment commands a larger share of manufacturing employment (10 percent), than it does in Massachusetts (5.3 percent).

Due to the nature and quality of survey response, occupational distributions were published for only three of the six 4-digit industries composing SIC 37. [1] The three industrial sectors for which occupational profiles were constructed-motor vehicles and motor vehicle equipment (SIC 371), aircraft and parts (SIC 372), and ship and boat building and repairing (SIC 373) - represented 65 percent of the Massachusetts workforce engaged in the manufacture of transportation equipment.

Employment in these industrial groups was concentrated primarily in a few large firms. The following table highlights both the significant number of small-sized firms in these industries, as well as the relatively greater percentage share of mid-sized firms which were involved in the manufacture of aircrafts and parts.

	Selected Industry Groups		
Selected Size Classes	SIC 371	SIC 372	SIC 373
Total, Number of Firms	47	34	59
Percent of Total	100.0	100.0	100.0
Less than 20 employees	57.4	38.2	66.1
20-49 employees	23.4	14.7	11.9
50-249 employees	12.7	38.3	17.0
More than 250 employees	6.4	8.8	5.1

The presence of small firms may be explained by the economic decisions of large firms in this industry to contract out specialized work to small shops.

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[1] The three industrial segments which failed to meet the requisite criteria for publication were the following: motorcycle and bicycle parts (SIC 375-100 employment), guided missiles and space vehicles and parts (SIC 376 - 11,800 employment) and miscellaneous transportation equipment (SIC 379 - 100 employment).

On the surface the occupational profiles which were constructed for these three industries appear to be distinct. At the major occupational category level, the only similarity which appears to exist is the small percentage share which sales command of total employment. Although the three sets of staffing patterns do diverge significantly, the occupational profiles of the motor vehicle and motor vehicle equipment industry (SIC 371)and the ship and boat building and repairing industry (SIC 373) do appear to follow along similar lines,differing principally in the relative magnitudes of specific major occupational categories.

Major Occupational Categories	Selected Industries 371	 372	 373
Total, All Occupations	6,520	10,530	5,810
Percent of Total	100.00	100.00	100.00
Managers and Officers	2.6	11.7	7.8
Professional Occupations	2.0	23.6	4.8
Technical Occupations	1.1	4.8	2.4
Service Occupations	4.3	0.8	3.6
Maintenance & Production Occupations	86.2	48.2	74.7
Clerical Occupations	3.5	10.5	6.4
Sales Occupations	0.3	9.4	0.3

The previously mentioned divergence between the occupational composition of SIC 372 and SIC's 371 and 373 is further substantiated by the data presented in the preceeding table.

While not even 1 out of 2 workers engaged in the manufacture of aircrafts and parts performed a maintenance or production related activity, more than 3 out of 4 members of the workforces constructing motor vehicles and motor vehicle parts and ship and boat building repairing were so engaged. Further, in the latter two industries (SIC 371 and SIC 373), employment was found to be predominantly concentrated within occupational titles which accounted for more than 1 percent of total employment, while employment in the former (SIC 372) was dispersed over more occupational titles. Almost 1 out of every 4 workers manufacturing motor vehicles and motor vehicle equipment in 1980 were employed as machine assemblers. Not surprisingly, the numerically significant occupations in the boat and ship building and repairing industry were welders and flamecutters (9.9 percent), carpenters (5.2 percent), electricians (5.3 percent), plumbers and/or pipefitters (6.5 percent), and production painters (6.1.percent). In marked contrast, the prominent blue collar occupations in the aircrafts and parts industry were inspector (4.0 percent), sheet metal worker (3.8 percent), metal lathe machine operator (3.8 percent), and machine assembler (3.6 percent).

Another interesting difference is the significant divergence observed in the percentage share which professionally categorized occupations command of total employment.

Selected Occupational Groups	Selected 3 Digit Industries 371	372	373
Total, All Occupations	100.0	100.0	100.0
Professional Occupations	2.0	23.6	4.8
Engineers	0.9	12.6	0.7
Systems Analysts	-	0.7	-
Accountant & Auditors	0.3	2.0	0.6
Purchasing Agents and/or Buyers	0.2	0.7	0.9
Total, Occupations listed	1.5	16.0	2.2

Establishments engaged in the manufacture of aircrafts and parts employ a labor force with a substantially higher concentration of engineers. Accountants and auditors were also of greater numerical significance in this industrial group than in the others. As was true within the maintenance and production occupational category, there was a greater variety of occupational titles in the professional category of the aircrafts and parts industry (SIC 372), than in either (SIC 371 or SIC 373).

OCCUPATIONS OF EMPLOYEES
MOTOR VEHICLES AND EQUIPMENT (SIC 371)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	170	2.61	25
Professional Occupations	130	1.99	N/A
Industrial Engineer	40	0.56	22
All Other Engineers	20	0.29	N/A
Purchasing Agent/Buyer	10	0.21	46
Accountants and Auditors	20	0.32	13
Nurse, Professional	10	0.09	13
Personnel/Labor Relations Spec.	20	0.29	7
All Other Professional Workers	10	0.08	N/A
Technical Occupations	70	1.07	N/A
Computer Programmer	10	0.12	11
All Other Engineering Technicians	60	0.93	N/A
Service Occupations	280	4.29	N/A
Janitors, Porters & Cleaners	220	3.39	5
Guards & Doorkeepers	50	0.70	12
Supervisor, Nonworking	10	0.16	11
Maintenance & Production Occupations	5,620	86.20	N/A
Mechanic, Maintenance	60	0.90	15
All Other Mechanics and Repairers	100	1.54	N/A
Carpenter	10	0.12	36
Electrician	50	0.71	6
Filers, Grinders, Etc.	70	1.10	8
Supervisor/Nonworking	260	3.93	3
Industrial Truck Operator	70	1.02	6
Inspector	350	5.41	8
Oiler	10	0.12	22
Painter, Maintenance	10	0.13	12
Plumber &/or Pipefitter	50	0.79	12
Stationary Engineer	10	0.12	11
Welders and Flamecutters	520	8.01	10
Painter Production	110	1.68	12
Punch-Press Operator, Metal	10	0.16	29
Conveyor Operator/Tender.	190	2.87	12
Machine Assembler	1,930	29.55	12
All Other Assemblers	10	0.03	N/A
All Other Skilled Workers	80	1.28	N/A
All Other Semiskilled Workers	1,530	23.40	N/A
All Other Laborers	190	2.97	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Clerical Occupations	230	3.53	N/A
Computer Operator	10	0.12	18
Keypunch Operator	10	0.13	15
Bookkeeper, Hand	30	0.42	5
General Clerk, Office	60	0.84	20
Payroll/Timekeeping Clerk . . .	10	0.18	6
All Other Office Clerical Workers	50	0.80	N/A
Production Clerk/Coordinator . .	40	0.62	7
Shipping/Receiving Clerk	10	0.19	11
Stock Clerk, Stockroom	10	0.19	34
All Other Plant Clerical Workers	11	0.52	N/A
Sales Occupations	20	0.31	N/A
Sales Representative	20	0.29	N/A
TOTAL	6,520	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
AIRCRAFT AND PARTS (SIC 372)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	1,230	11.68	4
Professional Occupations	2,480	23.55	N/A
Aeronautical Engineer	30	0.23	N/A
Chemical Engineer	10	0.04	N/A
Civil Engineer	30	0.23	N/A
Electrical & Electronic Engineer	30	0.31	27
Industrial Engineer	510	4.81	2
Mechanical Engineer	720	6.87	4
Metal Engineer	20	0.14	N/A
Mathematician	40	0.36	N/A
Statistician	10	0.12	N/A
Systems Analyst, Business	50	0.47	N/A
Systems Analyst, Scientific & Technical	20	0.18	N/A
Purchasing Agent/Buyer	80	0.72	9
Accountants/Auditors	210	2.01	2
Commercial Artist	30	0.26	4
Writer/Editor	60	0.59	2
Personnel/Labor Relations Specialist	40	0.35	3
Designer	190	1.75	N/A
All Other Professional Workers	420	4.00	N/A
Technical Occupations	510	4.84	N/A
Computer Programmer/Business	100	0.94	N/A
Computer Programmer/Scientific & Technical	30	0.26	N/A
Drafter	80	0.75	20
Electrical/Electronic Technician	90	0.83	1
Mechanical Engineering Technician	50	0.43	23
Tool Programmer, Numerical Control	30	0.28	22
All Other Engineering Technicians	120	1.15	N/A
All Other Technicians	20	0.16	N/A
Service Occupations	80	0.76	N/A
Janitors/Porters & Cleaners	80	0.73	6
Maintenance and Production Occupations	5,080	48.24	N/A
Mechanic, Maintenance	50	0.44	N/A
All Other Mechanics & Repairers	40	0.39	N/A
Truck Driver	20	0.14	23
Electrician	30	0.28	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Filers, Grinders, Etc.	250	2.32	2
Supervisor, Nonworking	150	1.39	6
Gear Cutting, Grinder	10	0.05	22
Industrial Truck Operator	10	0.05	N/A
Inspector	430	4.04	5
Instrument Repairer	10	0.12	N/A
Machinist	220	2.11	3
Maintenance Repairer, General Utility	150	1.44	46
Oiler	10	0.04	N/A
Painter, Maintenance	10	0.10	N/A
Plumber/Pipefitter	20	0.17	N/A
Sheet Metal Worker	400	3.76	8
Stationary, Engineer	10	0.04	N/A
Tool and Die Maker	120	1.16	7
Welders/Flamecutters	320	2.99	6
Coremaker, Hand	30	0.28	N/A
Drill-Press Operator	190	1.81	24
Grinding Machine Operator, Metal	260	2.47	10
Heat Treater, Annealer	60	0.54	2
Lathe Machine Operator, Metal	400	3.79	6
Machine Tool Operator, Numerical Control	330	3.16	17
Machine Tool Operator, Tool Room	110	1.01	3
Milling/Planning Machine Operator	240	2.23	16
Plater Helper	10	0.04	N/A
Tester	240	2.27	15
Painter Production	10	0.06	41
Punch-Press Operator, Metal	70	0.68	70
Punch-Press Setter, Metal	80	0.73	N/A
Power Brake/Bending Machine	30	0.23	N/A
Machine Assembler	380	3.59	[illegible]
Electrical Mechanical Equipment Assembler	70	0.66	50
All Other Assemblers	10	0.08	N/A
All Other Skilled Workers	60	0.58	N/A
All Other Semiskilled Workers	210	2.00	N/A
All Other Laborers	70	0.63	N/A
Clerical Occupations	1,110	10.54	N/A
Computer Operator	50	0.42	3
Keypunch Operator	30	0.32	9
Peripheral EDP Equipment Operator	10	0.05	N/A
All Other Office Machine Operators	20	0.19	N/A
Stenographer	70	0.65	N/A
Accounting Clerk	30	0.29	9
General Clerk, Office	80	0.74	20

SIC 372 (con't.)

OCCUPATION	EMPLOYMENT Number	Percent	Relative Error Percent
Payroll/Timekeeping Clerk	20	0.22	4
Personnel Clerk	10	0.11	9
Procurement Clerk	50	0.45	9
Secretary	250	2.37	5
Switchboard Operator/Receptionist	10	0.05	46
Typist	40	0.37	13
All Other Office Clerical Workers	20	0.23	N/A
Production Clerk/Coordinator . .	180	1.72	6
Shipping Packer	60	0.58	2
Shipping/Receiving Clerk	40	0.33	27
Stock Clerk, Stockroom	130	1.21	8
All Other Plant Clerical Workers .	10	0.11	N/A
Sales Occupations	40	0.38	N/A
Sales Representatives	40	0.36	25
TOTAL	10,530	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
SHIP AND BOAT BUILDERS AND REPAIRERS (SIC 373)

Reference Date June 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	450	7.75	9
Professional Occupations	280	4.82	N/A
Electrical & Electronic Engineer .	10	0.18	17
Mechanical Engineer.	20	0.39	15
Metal Engineer	10	0.08	N/A
Purchasing Agent/Buyer	50	0.89	16
Accountants/Auditors	30	0.56	11
Personnel and Labor Relations Specialist.	30	0.51	7
All Other Professional Workers . .	130	2.23	N/A
Technical Occupations.	140	2.41	N/A
Drafter.	70	1.20	4
Mechanical Engineering Technician.	20	0.25	N/A
Industrial Engineering Technician.	10	0.10	31
All Other Engineering Technicians.	10	0.13	N/A
Science Technicians.	10	0.22	N/A
All Other Technicians.	20	0.35	N/A
Service Occupations.	210	3.61	N/A
Janitors, Porters & Cleaners . . .	140	2.38	14
Guards & Doorkeepers	70	1.25	19
Maintenance & Production Occupations	4,340	74.70	N/A
Mechanic, Maintenance	70	1.17	28
Truck Driver	80	1.43	20
Carpenter.	300	5.21	17
Crane, Derrick/Hoist Operator. . .	100	1.75	12
Electrician.	310	5.29	18
Filers, Grinders, Buffers, Chippers, Cleaners/Polishers. . .	230	4.00	7
Supervisor, Nonworking	120	1.98	34
Rigger	190	3.32	8
Industrial Truck Operator.	20	0.34	44
Inspector	20	0.31	17
Helper, Trades	70	1.15	39
Order Filler	30	0.43	39
Plumber/Pipefitter	380	6.46	16
Sheet Metal Worker	200	3.50	12
Stationay Boiler Firer	10	0.08	N/A
Welders and Flamecutters	580	9.92	9

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Lay-out Marker, Metal.	10	0.15	N/A
Machine Tool Operator, Toolroom. .	10	0.15	N/A
Machine Tool Setter, Metal	50	0.91	8
Patternmaker, Wood	30	0.44	22
Shipfitter	250	4.36	18
Painter, Production.	350	6.09	15
All Other Skilled Craft and Kindred Workers	490	8.46	N/A
All Other Semiskilled Craft and Kindred Workers..	360	6.23	N/A
All Other Laborers & Unskilled Workers	80	1.38	N/A
Clerical Occupations	370	6.37	N/A
Accounting Clerk	20	0.29	33
Order Clerk.	50	0.87	7
Payroll/Timekeeping Clerk.	20	0.32	24
Secretary.	60	1.06	19
Typist	10	0.20	29
All Other Office Clerical Workers.	70	1.19	N/A
Production Clerk/Coordinator . . .	50	0.82	12
Stock Clerk, Stockroom	90	1.46	13
All Other Plant Clerical Workers .	10	0.17	N/A
Sales Occupations.	20	0.34	N/A
Sales Representative	20	0.34	N/A
TOTAL	5,810	100.00	N/A

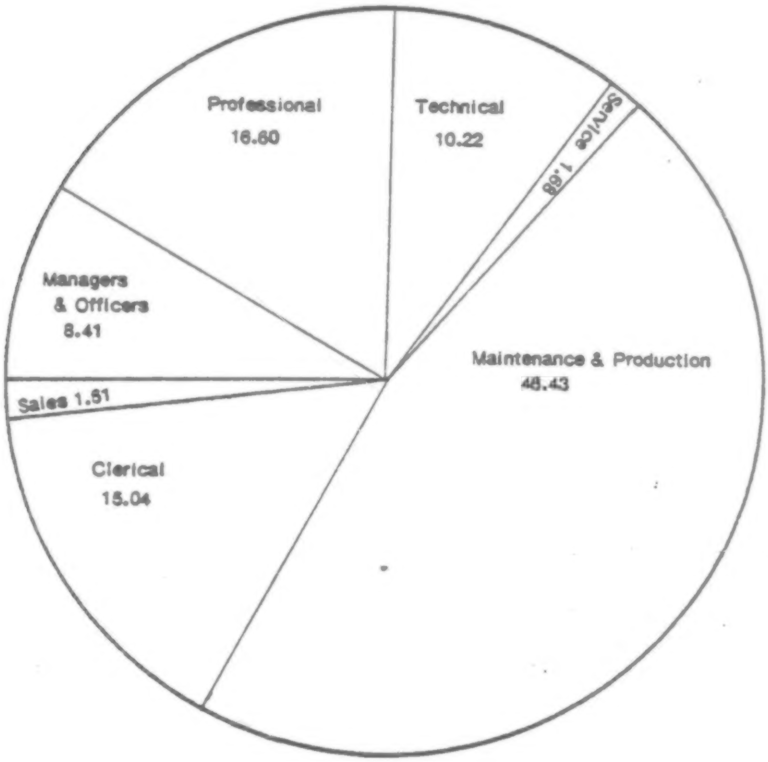
N/A Relative Error Not Available

Note: May not add to totals due to rounding

MEASURING, ANALYZING, AND CONTROLLING INSTRUMENTS; PHOTOGRAPHIC, MEDICAL, AND OPTICAL GOODS; WATCHES AND CLOCKS

(SIC 38)

DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY



Ranked Occupational Employment

1.	All Other Semiskilled Workers	4,920
2.	Managers and Officers	4,810
3.	Electro-Mechanical Equipment Assembler	2,430
4.	All Other Laborers and Unskilled Workers	2,360
5.	Electrical and Electronic Technicians	2,350
6.	All Other Professional Workers	2,250
7.	Electrical-Electronic Assemblers	1,990
8.	Electrical-Electronic Engineers	1,950
9.	Secretary	1,770
10.	All Other Engineers	1,670

These 10 occupational categories make up 46% of total industry employment.

SIC

38

This major group includes establishments engaged in manufacturing instruments (including professional and scientific)for measuring, testing, analyzing, and controlling, and their associated sensors and accessories; photographic, medical, and optical goods; and watches and clocks.

Employment in the instruments and related products industry has increased 11.8 percent from 1977 to 1980, while manufacturing employment grew 8.3 percent over the same time period. Employment levels have remained fairly constant, an increase of only one hundred workers between 1979 and 1980. However, there has been substantial employment changes within this instruments industry. Measuring and controlling instruments (SIC 382), which makes up approximately 33 percent of the total instruments industry employment estimate, has shown substantial growth over the last three years (22.3 percent from 1977 to 1980). Surgical, medical, and dental instruments (SIC 384), which makes up approximately 11 percent of the total instruments industry employment estimate, has also grown over 20 percent over the last three years (21.8 percent). Some of the employment increases occurring among these specific instrument segments were offset by decreases in other segments. For example, photographic equipment and supplies (SIC 386), 23 percent of the instrument industry, has shown the effect of foreign competion and the high cost of its products to the consumer. Employment has declined by approximately 12 percent between 1979 and 1980,however more stable employment levels are anticipated in the future.

The occupational distribution within the instruments and related products industry reveals a substantial shift between the professional/technical occupations (26.8 percent) and maintenance and production occupations (46.4 percent). A look at the 1974 OES survey reveals that an occupational shift has occurred during the six year period, especially in the professional/technical and maintenance and production occupations; a 4.3 percentage point increase for professional/ technical occupations and a 4.9 percentage point decrease for maintenance and production workers. The remaining occupational groups remained fairly constant since the 1974 OES survey, with changes around the one percentage point range.

COMPARISON OF OCCUPATIONAL PERCENTAGE DISTRIBUTION OF PRIOR SURVEYS, SIC 38

	1974	1977	1980	Percentage Point Change 1974 to1980
Managers and Officers	7.21	7.65	8.42	+1.21
Professional Occupations	14.65	15.53	16.60	+1.95
Technical Occupations	7.85	9.72	10.22	+2.37
Service Occupations	1.92	1.85	1.68	-0.24
Maintenance Production & Occupations	51.30	49.41	46.43	-4.87
Clerical Occupations	16.21	14.74	15.04	-1.17
Sales Occupations	0.86	1.10	1.61	+0.75
Total	100.00	100.00	100.00	-

An analysis of the occupational distribution within selected instrument industries, revealed that maintenance and production workers make up the largest share of total workers. Professional/technical workers run a close second in two industries: optical instruments and lenses (SIC 383), 34.5 percent verses35.6 percent and photographic equipment and supplies (SIC 386),36.4 percent verses 41.9 percent.

A comparison of the ratio of maintenance and production workers to professional/technical workers within selected instrument industries, with their percent change in employment levels from 1977 to 1980, revealed: that those industries with approximately two or less maintenance and production workers to every one professional/technical worker had greater employment changes than those which have a much higher share of maintenance and production workers to professional/technical workers. The one exception was the photographic equipment and supplies industry (SIC 386), which has experienced an erratic employment pattern over the last few years.

COMPARISON OF RATIO OF MAINTENANCE AND PRODUCTION WORKERS TO PROFESSIONAL/TECHNICAL WITH PERCENT CHANGE IN EMPLOYMENT LEVELS, * SELECTED INSTRUMENT INDUSTRIES, 1977 TO 1980

	38	383	384	385	386	387
Professional/Technical Occupations	15,320	2,090	1,520	460	4,850	100
Maintenance and Production Occupations	26,520	2,160	2,670	4,270	5,580	1,020
Ratio of $\frac{\text{MPO}}{\text{P/JO}}$	$\frac{1.7}{1}$	$\frac{1}{1}$	$\frac{1.8}{1}$	$\frac{9.3}{1}$	$\frac{1.2}{1}$	$\frac{10.2}{1}$
% Δ of Employment Levels 1977 to 1980	+13.1	+19.1	+21.8	+1.6	+0.9	-25.3

* Employment and Wages in Establishments Subject to the Massachusetts Employment Security Law.

OCCUPATIONS OF EMPLOYEES
INSTRUMENTS AND RELATED PRODUCTS (SIC 38)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	4,810	8.42	3
Professional Occupations	9,480	16.60	N/A
Electrical & Electronic Engineer .	1,950	3.41	6
Industrial Engineer.	350	0.61	6
Mechanical Engineer.	460	0.81	6
All Other Engineers.	1,670	2.93	N/A
Chemist.	260	0.45	12
All Other Natural & Mathematical Scientists	450	0.78	13
Systems Analyst, Electronic Data Processing	180	0.31	11
Purchasing Agent/Buyer	520	0.91	4
Accountants/Auditors	530	0.92	4
Cost Estimator	90	0.15	7
Writer/Editor.	140	0.24	7
Nurse, Professional.	60	0.09	7
Personnel and Labor Relations Specialists	310	0.53	N/A
Designer	260	0.44	5
All Other Professional Workers . .	2,250	3.93	4
Technical Occupations.	5,840	10.22	N/A
Computer Programmer.	230	0.40	6
Drafter.	800	1.40	4
Electrical & Electronic Technician	2,350	4.12	5
Mechanical Engineering Technician.	220	0.39	12
Tool Programmer, Numerical Control	40	0.06	15
Industrial Engineering Technician.	120	0.21	13
All Engineering Technicians. . . .	1,350	2.36	N/A
Science Technicians.	250	0.44	8
All Other Technicians.	480	0.84	N/A
Service Occupations.	960	1.68	N/A
Janitors, Porters & Cleaners . . .	520	0.91	4
Guards & Doorkeepers	300	0.52	6
Supervisor, Nonworking Service . .	80	0.14	8
All Other Service Workers.	60	0.11	N/A

SIC 38 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Maintenance & Production Occupations.	26,520	46.43	N/A
Mechanic, Maintenance	620	1.07	2
All Other Mechanics & Repairers . .	140	0.25	N/A
Truck Driver.	50	0.09	13
Carpenter	90	0.15	6
Delivery & Route Worker	50	0.08	19
Electrician	290	0.49	3
Filers, Grinders, Buffers, Chippers Cleaners/Polisers.	60	0.10	27
Supervisor, Nonworking.	1,250	2.18	4
Gear Cutting, Grinding/Shaping Machine Operator	10	0.02	28
Industrial Truck Operator	30	0.05	28
Inspector	1,340	2.34	4
Instrument Repairer	150	0.26	8
Machinist	580	1.02	6
Maintenance Repairer, General Utility	330	0.58	8
Helper, Trades.	60	0.10	9
Millwright.	20	0.03	27
Order Filler.	130	0.22	11
Painter, Mainentnance	20	0.03	8
Electroplater	80	0.14	35
Plumber/Pipefitter.	130	0.23	6
Production Packager	580	1.00	26
Sewing Machine Operator, Regular Equipment - Non Garment.	30	0.04	15
Sewing Machine Operator, Special Automatic Equipment Non Garment. .	20	0.02	N/A
Sheet Metal Worker.	220	0.38	13
Stationary Boiler Firer	30	0.04	10
Tool and Die Maker.	330	0.57	10
Welders and Flamecutters.	190	0.32	17
Optician, Dispensing/Optical Mechanic	60	0.09	18
Chemical Operator A	140	0.24	7
Chemical Operator B	130	0.22	7
Chemcial Operator Helper.	10	0.02	14
Drill-Press Operator	180	0.31	19
Glass Blower.	10	0.01	17
Grinding Machine Operator, Metal. .	310	0.54	9
Heat Treater, Annealer/Temperer . .	20	0.03	34
Lathe Mahine Operator, Metal. . . .	260	0.46	16
Machine Tool Operator, Combination.	380	0.66	14
Machine Tool Operator, Numerical Control	100	0.17	20
Machine Tool Operator, Toolroom . .	50	0.08	24

SIC 38 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Machine Tool Setter, Metal	150	0.25	12
Milling/Planing Machine Operator .	80	0.14	13
Plater Helper.	130	0.22	6
Tester	1,170	2.05	5
Painter, Production.	150	0.25	12
Wirer, Electronic	1,010	1.76	14
Punch-Press Operator, Metal. . . .	100	0.17	15
Punch-Press Setter, Metal	50	0.08	30
Compression/Injection-Molding Machine Operator, Plastics. . . .	500	0.86	12
Conveyor Operator/Tender	10	0.02	9
Dip Plater, Non-Electrolytic . . .	170	0.29	6
Chief Operator	70	0.11	10
Clock Watch/Chronometer Assembler.	400	0.70	N/A
Instrument Maker/Assembler	510	0.88	10
Electro-Mechanical Equipment Assembler	2,430	4.26	9
Electrical & Electronic Assembler.	1,990	3.48	14
All Other Assemblers	730	1.28	N/A
All Other Skilled Craft and Kindred Workers	1,110	1.95	N/A
All Other Semiskilled Craft and Kindred Workers	4,920	8.62	N/A
All Other Laborers	2,360	4.12	N/A
Clerical Occupations	8.590	15.04	N/A
Bookkeeping/Billing Machiner Operator.	30	0.05	17
Computer Operator.	140	0.25	6
Keupunch Operator.	230	0.40	9
Peripheral EDP Equipment Operator.	30	0.05	1
All Other Office Machine Operators	50	0.09	N/A
Stenogrpaher	50	0.07	29
Accounting Clerk	660	1.14	4
Bookkeeper, Hand	200	0.35	11
File Clerk	120	0.21	12
General Clerk, Office.	590	1.02	4
Order Clerk	380	0.66	5
Payroll/Timekeeping Clerk.	150	0.25	6
Personnel Clerk.	80	0.13	8
Procurement Clerk	160	0.27	7
Receptionist	30	0.05	3
Secretary.	1,770	3.09	3
Statistical Clerk.	30	0.05	13
Switchboard Operator	60	0.10	6

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Switchboard Operator/Reception. .	90	0.16	8
Typist.	450	0.78	5
Clerical Supervisor	80	0.14	12
All Other Office Clerical Workers	470	0.81	N/A
Production Clerk/Coordinator. . .	610	1.06	5
Shipping Packer	230	0.39	9
Shipping/Receiving Clerk	380	0.66	5
Stock Clerk, Stockroom.	1,290	2.25	4
All Other Plant Clerical Workers.	230	0.40	N/A
Sales Occupations	920	1.61	N/A
Sales Representative.	900	1.56	7
Sales Clerk	20	0.04	N/A
TOTAL	57,120	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
OPTICAL INSTRUMENTS AND LENSES (SIC 383)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	750	12.38	5
Professional Occupations	1,180	19.47	N/A
Electric & Electronic Engineer . . .	310	5.16	7
Industrial Engineer.	30	0.47	6
Mechanical Engineer.	130	2.19	22
All Other Engineers.	100	1.64	N/A
Chemists	30	0.54	33
Purchasing Agent/Buyer	50	0.80	24
Accountants/Auditors	50	0.84	17
Personnel & Labor Relations Specialists	20	0.33	18
All Other Professional Workers . . .	460	0.46	N/A
Technical Occupations	910	15.02	N/A
Computer Programmer	30	0.46	12
Drafter.	150	2.41	33
Electric & Electronic Technician . .	450	7.43	18
Mechanical Engineer Technician . . .	60	0.94	21
All Other Engineer Technicians . . .	50	0.88	N/A
Science Technicians	10	0.19	7
All Other Technicians	160	2.63	N/A
Service Occupations.	70	1.16	N/A
Janitors, Porters & Cleansers. . . .	70	1.16	12
Maintenance & Production Occupation. .	2,160	35.64	N/A
All Other Mechanics & Repairers. . .	10	0.55	N/A
Electrician.	10	0.13	22
Supervisor, Nonworking	130	2.16	24
Gear Cutting, Gear Grinding/Gear Shaping Machine Operator.	10	0.08	6
Inspector	100	1.63	26
Sheet Metal Worker	10	0.09	12
Chemical Operator B	30	0.49	9
Drill-Press Operator	10	0.13	23
Glass Blower	10	0.13	12
Machine Tool Operator, Combination .	20	0.31	N/A
Machine Tool Operator, Numerical - Control	30	0.44	14
Machine Tool Operator, Toolroom . .	10	0.09	7
Machine Tool Setter, Metal	20	0.29	12
Tester	80	1.28	35

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Electro-Mechanical Equipment Assembler	170	2.82	6
Electrical/Electronic Assembler	300	4.88	14
All Other Assemblers	20	0.24	N/A
All Other Skilled Craft and Kindred Workers	410	6.74	N/A
All Other Semiskilled Craft and Kindred Workers	600	9.89	N/A
All Other Laborers	200	3.25	N/A
Clerical Occupations	870	14.36	N/A
Computer Operator	20	0.37	15
Keypunch Operator	10	0.23	26
All Other Office Machine Operators	20	0.30	N/A
Accounting Clerk	90	1.40	21
Personnel Clerk	10	0.19	27
Procurement Clerk	30	0.49	25
Secretary	220	3.56	16
Statistical Clerk	10	0.09	30
Switchboard Operator	10	0.11	N/A
Typist	70	1.08	23
Clerical Supervisor	10	0.23	26
All Other Office Clerical	210	3.39	N/A
Production Clerk/Coordinator	50	0.74	8
Shipping Packer	10	0.11	8
Stock Clerk, Stockroom	60	1.04	25
All Other Plant Clerical	40	0.61	N/A
Sales Occupations	120	1.98	N/A
Sales Representative	120	1.98	21
TOTALS	6,060	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
MEDICAL INSTRUMENTS AND SUPPLIES (SIC 384)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	680	10.63	11
Professional Occupations	630	9.84	N/A
Chemical Engineer	30	0.40	15
Electric & Electronic Engineer	90	1.44	29
Mechanical Engineer	40	0.54	9
All Other Engineers	70	1.04	N/A
Chemist	80	1.25	30
Systems Analyst, EDP	30	0.42	30
Purchasing Agent/Buyer	70	1.12	28
Accountants/Auditors	40	0.65	32
Nurse, Professional	10	0.14	N/A
Personnel & Labor Relations Specialists	20	0.36	34
Designer	20	0.25	21
All Other Professional Workers	130	1.96	N/A
Technical Occuaptions	890	13.91	N/A
Computer Programmer	30	0.40	13
Drafter	100	1.56	32
Electric/Electronic Technician	310	4.86	21
Mechanical Engineer Technician	30	0.53	31
Industrial Engineer Technician	10	0.10	12
All Other Engineer Technicians	10	0.14	N/A
Science Technicians	110	1.78	1
All Other Technicians	290	4.51	N/A
Service Occupations	70	1.09	N/A
Janitors, Porter & Cleaners	50	0.81	25
Guards & Doorkeepers	20	0.23	32
Maintenance & Production Occupation	2,670	41.72	N/A
Mechanic, Maintenance	30	0.47	25
Carpenter	10	0.07	23
Electrician	10	0.15	N/A
Supervisor, Nonworking	160	2.44	34
Inspector	110	1.74	24
Order Filler	20	0.32	18
Sewing-Machine Operator/Automatic Equipment - Nongarment	10	0.09	N/A

SIC 384 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Tester	110	1.75	20
Wirer, Electronic	90	1.44	34
Conveyor Operator/Tender	10	0.14	N/A
Electric/Electronic Assembler	50	0.75	N/A
All Other Assemblers	670	10.47	N/A
All Other Skilled Craft and Kindred Workers	260	4.02	N/A
All Other Semiskilled Craft and Kindred Workers	650	10.19	N/A
All Other Laborers	480	7.60	N/A
Clerical Occupations	1,090	17.03	N/A
Computer Operator	20	0.37	33
Keypunch Operator	40	0.54	10
All Other Office Machine Operators	10	0.20	N/A
Accounting Clerk	90	1.47	28
File Clerk	20	0.28	33
Order Clerk	80	1.27	22
Personnel Clerk	10	0.20	9
Receptionist	10	0.10	14
Secretary	220	3.46	16
Typist	100	1.52	23
Clerical Supervisor	10	0.17	6
All Other Office Clerical	280	4.46	N/A
Production Clerk/Coordinator	40	0.65	20
Shipping/Receiving Clerk	80	1.20	19
Stock Clerk, Stockroom	30	0.50	31
All Other Plant Clerical	50	0.77	N/A
Sales Occupations	370	5.78	N/A
Sales Representative	360	5.67	18
Sales Clerk	10	0.07	N/A
TOTALS	6,400	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
OPTHALMIC GOODS (SIC 385)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	620	9.62	14
Professional Occupations	270	4.19	N/A
Industrial Engineer	70	1.05	26
Mechanical Engineer	40	0.66	29
All Other Engineers	20	0.31	N/A
Chemist	10	0.13	25
Systems Analyst, EDP	10	0.13	20
Purchasing Agent &/or Buyer	20	0.23	20
Accountants and Auditors	30	0.41	33
Cost Estimator	30	0.46	43
Nurse, Professional	10	0.10	25
Personnel & Labor Relations Specialist	10	0.13	37
All Other Professional Workers	20	0.26	N/A
Technical Occupations	190	2.95	N/A
Computer Programmer	20	0.29	10
Drafter	30	0.48	5
Electrical & Electronic Technicians	20	0.29	31
Mechanical Engineering Technician	40	0.55	13
All Other Engineering Technicians	80	1.16	N/A
Service Occupations	100	1.55	N/A
Janitors, Porters, & Cleaners	50	0.79	15
Guards & Doorkeepers	40	0.55	38
Supervisor, Nonworking Service	10	0.13	36
Maintenance and Production Occupations	4,270	66.23	N/A
Mechanic, Maintenance	40	0.65	3
Truck Driver	10	0.10	43
Carpenter	10	0.13	N/A
Electrician	20	0.31	16
Supervisor, Nonworking	150	2.35	47
Inspector	330	5.13	22
Machinist	160	2.45	26
Maintenance Repairer, General Utility	140	2.14	5
Order Filler	50	0.69	48
Plumber & / or Pipefitter	10	0.13	N/A
Production Packager	70	1.02	41
Sewing Machine Operator, Special Equipment Nongarment	10	0.15	N/A
Sheet Metal Worker	10	0.10	N/A

SIC 385 (Con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Tool & Die Maker	90	1.35	19
Grinding Machine Operator, Metal	120	1.80	13
Heat Treater, Annealer	10	0.13	N/A
Machine Tool Operator, Toolroom	10	0.21	39
Tool Setter, Metal	40	0.55	24
Painter Production	60	0.91	51
Compression/Injection Molding Machine Operator	380	5.89	45
Instrument Maker/Assembler	10	0.18	N/A
All Other Skilled Workers	170	2.59	N/A
All Other Semiskilled Workers	1,500	23.33	N/A
All Other Laborers	870	13.38	N/A
Clerical Occupations	980	15.20	N/A
Computer Operator	40	0.66	10
Keypunch Operator	70	1.02	25
All Other Office Machine Operators	10	0.16	N/A
Accounting Clerk	140	2.23	5
File Clerk	10	0.07	36
General Clerk, Office	70	1.14	23
Order Clerk	80	1.21	23
Payroll/Timekeeping Clerk	40	0.65	33
Personnel Clerk	10	0.20	36
Procurement Clerk	20	0.23	21
Receptionist	10	0.09	19
Secretary	140	2.18	10
Switchboard Operator	10	0.10	N/A
Typist	10	0.18	40
Clerical Supervisor	10	0.07	36
All Other Office Clerical Workers	70	1.07	N/A
Production Clerk/Coordinator	50	0.80	6
Shipping Packer	10	0.18	40
Shipping/Receiving Clerk	40	0.55	32
Stock Clerk, Stockroom	130	2.03	15
All Other Plant Clerical Workers	10	0.18	N/A
Sales Occupations	70	1.09	N/A
Sales Representatives	70	1.13	64
TOTAL	6,500	100.00	-

N/A Relative Error Not Available
Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
PHOTOGRAPHIC EQUIPMENT AND SUPPLIES (SIC 386)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	800	6.00	4
Professional Occupations	3,410	25.60	N/A
Electrical & Electronic Engineers	30	0.20	26
Industrial Engineer	20	0.12	40
All Other Engineers	980	7.32	N/A
Chemist	10	0.08	46
All Other Natural and Mathematical Scientists	240	1.81	N/A
Purchasing Agent &/or Buyer	70	0.52	3
Accountants and Auditors	200	1.48	9
Writer and/or Editor	20	0.12	N/A
Nurse, Professional	10	0.09	5
Personnel & Labor Relations Specialist	140	1.05	5
Designer	90	0.70	2
All Other Professional Workers	1,600	11.93	N/A
Technical Occupations	1,440	10.81	N/A
Computer Programmer	40	0.29	5
Drafter	200	1.46	4
Electrical & Electronic Technicians	110	0.82	3
All Other Engineering Technicians	1,020	7.57	N/A
Science Technicians	40	0.32	N/A
All Other Technicians	30	0.22	N/A
Service Occupations	410	3.08	N/A
Janitors, Porters, & Cleaners	160	1.20	7
Guards & Doorkeepers	180	1.33	2
Supervisor, Nonworking Service	60	0.42	27
All Other Service Workers	10	0.08	N/A
Maintenance and Production Occupations	5,580	41.89	N/A
Mechanic, Maintenance	490	3.66	2
All Other Mechanics and Repairers	70	0.50	N/A
Carpenter	40	0.26	5
Electrician	190	1.43	4
Supervisor, Nonworking	140	1.04	7
Instrument Repairer	90	0.69	11
Machinist	100	0.71	7

SIC 386 (Con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Painter, Maintenance	10	0.08	5
Plumber &/or Pipefitter	80	0.59	7
Sheet Metal Worker	110	0.85	N/A
Stationary Boiler Firer	20	0.16	26
Tool and Die Maker	50	0.33	N/A
Welders and Flamecutters	10	0.07	N/A
Chemical Operator A	130	0.98	18
Chemical Operator B	90	0.70	28
Chemical Operator Helper	10	0.06	14
Plater Helper	110	0.82	17
Tester	540	4.01	4
Dip Plater, Non-Electrolytic	150	1.09	20
Chief Operator	60	0.45	10
All Other Assemblers	80	0.56	N/A
All Other Skilled Workers	360	2.65	N/A
All Other Semiskilled Workers	2,300	17.06	N/A
All Other Laborers	350	2.60	N/A
Clerical Occupations	1,650	12.39	N/A
Computer Operator	20	0.11	23
Keypunch Operator	10	0.08	14
Peripheral EDP Equipment Operator	10	0.09	N/A
Accounting Clerk	80	0.58	27
General Clerk, Office	270	2.04	14
Order Clerk	50	0.36	7
Procurement Clerk	10	0.05	45
Receptionist	10	0.04	11
Secretary	440	3.31	2
Switchboard Operator	10	0.09	10
All Other Office Clerical Workers	190	1.39	N/A
Production Clerk/Coordinator	10	0.05	39
All Other Plant Clerical Workers	20	0.12	N/A
Shipping/Receiving Clerk	30	0.20	34
Stock Clerk, Stockroom	490	3.64	10
Sales Occupations	30	0.23	N/A
Sales Representatives	30	0.23	49
TOTAL	13,320	100.00	-

N/A Relative Error Not Available
Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
WATCHES, CLOCKS, AND WATCHCASES (SIC 387)

Reference Date April 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	40	2.94	6
Professional Occupations	80	5.88	N/A
Electrical and Electronic Engineers	10	0.45	5
Industrial Engineer	10	0.83	8
Mechanical Engineer	10	1.05	13
Purchasing Agent &/or Buyer . .	10	0.75	8
Accountants and Auditors	10	0.52	12
Cost Estimator	10	0.45	23
All Other Professional Workers .	20	1.57	N/A
Technical Occupations	20	1.47	N/A
Drafter	10	0.52	14
All Other Engineering Technicians	10	0.82	N/A
Service Occupations	50	3.68	N/A
Janitors, Porters, & Cleaners . .	10	0.98	8
Guards & Doorkeepers	10	0.37	N/A
All Other Service Workers . . .	30	2.26	N/A
Maintenance and Production Occupations	1,020	75.00	N/A
Electrician	10	0.37	9
Supervisor, Nonworking	40	3.17	4
Inspector	40	2.71	19
Machinist	30	1.96	32
Maintenance Repairer, General Utility	30	2.11	4
Helper, Trades	10	0.52	20
Production Packager	10	0.75	22
Tool and Die Maker	50	3.77	4
Grinding Machine Operator, Metal	10	0.83	49
Lathe Machine Operator, Metal . .	10	1.05	18
Machine Tool Operator, Combination	10	1.05	15
Painter Production	30	2.26	14
Punch Press Operator, Metal . .	50	3.77	25
Punch Press Setter, Metal . . .	20	1.51	20
Compression/Injection Molder . .	10	0.83	17
Clock, Watch Assembler	400	30.36	1
Instrument Maker/Assembler . . .	30	2.19	37
Electrical/Electronic Assembler .	10	0.37	27
All Other Skilled Workers . . .	40	2.70	N/A
All Other Semiskilled Workers . .	60	4.49	N/A
All Other Laborers	120	8.98	N/A

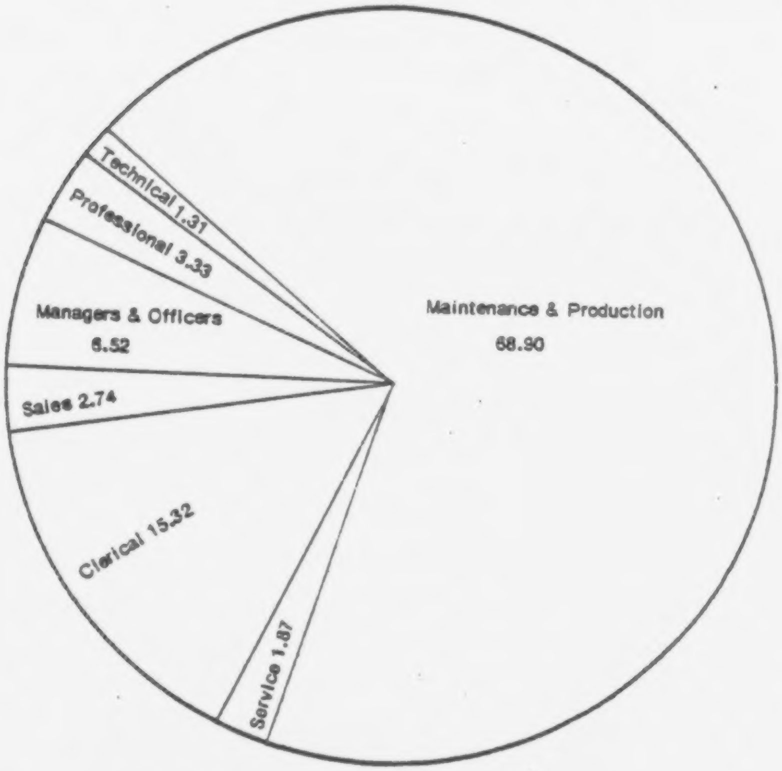
SIC 387 (Con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Clerical Occupations	150	11.03	N/A
All Other Office Machine Operators	10	0.67	N/A
Accounting Clerk	10	0.98	23
Bookkeeper, Hand	10	0.37	21
General Clerk, Office	10	0.37	20
Order Clerk	10	0.67	33
Payroll/Timekeeping Clerk . . .	10	0.60	10
Procurement Clerk	10	0.37	9
Secretary	10	0.98	8
Typist	10	0.67	12
All Other Office Clerical Workers	10	0.74	N/A
Production Clerk/Coordinator . .	10	1.05	3
Shipping Packer	20	1.28	21
Shipping/Receiving Clerk	10	0.52	9
Stock Clerk, Stockroom	10	0.67	20
Sales Occupations	*	-	N/A
TOTAL	1,360	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

MISCELLANEOUS MANUFACTURING INDUSTRIES (SIC 39)


DISTRIBUTION OF EMPLOYMENT BY MAJOR OCCUPATIONAL CATEGORY

Ranked Occupational Employment

1.	Assembler	3,060
2.	All Other Semiskilled Workers	2,190
3.	All Other Laborers and Unskilled Workers	1,790
4.	Managers and Officers	1,740
5.	Production Packager	940
6.	Bench Hand, Jewelry	890
7.	Filers, Grinders, Etc.	880
8.	Supervisor, Nonworking	800
9.	Inspector	750
10.	Compression/Injection Molding Machine Operator	650

These 10 occupational categories make up 47% of total industry employment.

SIC

39

This industry group includes establishments primarily engaged in manufacturing products not classified in any other manufacturing group. This means that many of these industries are too diverse, making comparisons between industries difficult and of questionable value. Analyzing the occupational data at the group level is likewise of questionable value.

The two major industries within this miscellaneous group in Massachusetts are jewelry, silverware and plated ware (SIC 391) employing 8900,and toys and amusement, sporting and athletic goods (SIC 394) employing 8300. Other industries include musical instruments (SIC 393), pens, pencils and other office and artists' materials (SIC 395) and costume jewelry (SIC 396).

Jewelry, Silverware and Plated Ware (SIC 391)

Establishments in this industry are primarily engaged in manufacturing one of the following: (a) jewelry and other articles worn on or carried about the person, made of precious metals; (b) flatware; (c) unassembled jewelry parts; and (d) lapidary work.

Interestingly, this industry is highly centralized geographically, more so than any other manufacturing industry. Eighty-nine percent of the employment is located in the town of Attleboro. Also, more than three fourths of the employment is concentrated in firms with 100 or more workers. This concentration of employment in the larger size classes should result in more occupational diversity among all categories of workers. Additionally, there should be a greater share of professional and technical workers. This is especially true of the professional category, which accounts for more than 4 percent of total employment. The most prevalent occupation in this category is designer, having 100 workers and accounting for 27 percent of this category.

This industry also has a greater share of both clerical and sales occupations. The clerical share for a manufacturing industry is generally 10-12 percent of total employment while the sales' share is usually less than two percent. The percentage shares in jewelry, silverware and Plated ware were 18.5 percent for clerical and 4.5 percent for sales.

Maintenance and production workers account for almost 62 percent of the workers, slightly less than the average for manufacturing (64 percent). Twenty seven percent of the production workers are in manufacturing occupations unique to this particular industry, such as jeweler/silversmith, bench hand, jewelry, stone setter, etc.

OCCUPATIONS OF EMPLOYEES
MISC. MANUFACTURING INDUSTRIES (SIC 39)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers.	1,740	6.52	3
Professional Occupations	890	3.33	N/A
Industrial Engineer.	100	0.37	4
Mechanical Engineer.	90	0.34	8
All Other Engineers	30	0.12	N/A
Chemist.	20	0.07	29
Systems Analysts, EDP	50	0.18	5
Purchasing Agent/Buyer	130	0.48	4
Accountants/Auditors	130	0.49	3
Nurse, Professional	30	0.10	5
Personnel & Labor Relations Specialists	70	0.24	4
Designer	190	0.72	3
All Other Professional Workers . .	50	0.19	N/A
Technical Occupations	350	1.31	N/A
Computer Programmer	80	0.30	4
Drafter	50	0.19	6
Electrical & Electronic Technician	70	0.25	15
Tool Programmer, Numerical Control	10	0.05	5
All Other Engineering Technicians.	60	0.21	N/A
All Other Technicians	80	0.30	N/A
Service Occupations	500	1.87	N/A
Janitors, Porters & Cleaners . . .	320	1.18	4
Guards, & Doorkeepers	120	0.45	7
Food Service Workers	10	0.03	7
Supervisor, Nonworking, Service. .	40	0.14	13
All Other Service Workers	10	0.03	N/A
Maintenance & Production Occupation.	18,390	68.90	N/A
Mechanic, Automotive	10	0.03	8
Mechanic, Maintenance	100	0.37	12
All Other Mechanics & Repairers. .	30	0.12	N/A
Truck Driver	90	0.32	5
Cabinetmaker	150	0.57	11
Carpenter	40	0.16	8
Compositor/Typesetter	20	0.08	7
Crane, Derrik/Hoist Operator . . .	10	0.04	17
Delivery & Route Worker.	30	0.10	13
Electrician	70	0.27	5

SIC 39 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Filers, Grinders, Buffers, Chippers Cleaners/Polishers.	880	3.30	6
Supervisor, Nonworking	800	2.98	3
Rigger	20	0.08	19
Industrial Truck Operator	250	0.92	7
Inspector	750	2.82	5
Jeweler/Silversmith	70	0.26	8
Machinist	240	0.89	4
Maintenance Repairer, General Utility	110	0.40	7
Helper, Trades	150	0.57	27
Millwright	110	0.41	9
Oiler	10	0.01	18
Order Filler	350	1.31	6
Painter, Maintenance	30	0.10	17
Electroplater.	150	0.55	5
Plumber/Pipefitter	20	0.06	7
Press Operator/Plate Printer	70	0.27	11
Production Packager	940	3.52	6
Sewing-Machine Operator, Regular Equipment - Garment	80	0.31	32
Sewing Machine Operator, Special and or Automatic Equipment-Nongarment .	20	0.05	23
Sheet Metal Worker	110	0.41	24
Stationary Boiler Firer	20	0.07	15
Tool and Die Maker	160	0.59	3
Welders and Flamecutters	110	0.40	7
Bench Hand, Jewelry.	890	3.32	4
Caster	40	0.15	3
Caster, Finished/Semi-Finished Products	30	0.10	10
Centrifugal-Casting-Machine Operator	10	0.05	18
Chain Maker, Hand	50	0.20	15
Drill-Press Operator	30	0.11	16
Etcher/Engraver.	190	0.69	8
Fabricator, Plastics	40	0.14	17
Finisher, Hand	40	0.13	17
Gem Cutter	10	0.03	N/A
Grinding Machine Operator, Metal . .	210	0.80	11
Heat Treater, Annealer	10	0.04	16
Jewel-Bearing Lathe Operator	10	0.04	N/A
Lathe Operator, Wood	10	0.03	13
Lathe Machine Operator, Metal . . .	40	0.13	12
Lay-out Marker, Metal.	10	0.04	16
Machine Tool Operator, Combination .	50	0.18	12
Machine Tool Operator, Numerical - Control	40	0.15	15

SIC 39 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Machine Tool Operator, Toolroom. . .	50	0.18	11
Machine Tool Setter, Metal	70	0.26	14
Metal Mold Maker	50	0.17	3
Milling/Planing Machine Operator . .	50	0.20	6
Wood Machinist	70	0.26	23
Plater Helper	180	0.68	6
Ripsaw Operator	10	0.02	19
Rubber Mold Maker	10	0.04	7
Stone Setter	90	0.33	15
Tester	160	0.60	14
Tumbler Operator, Plastics	10	0.02	14
Vulcanizer, Rubber Plate	10	0.05	20
Wax Pattern Worker	130	0.47	12
Woodworking Machine Operator	10	0.02	34
Painter, Production.	270	1.02	20
Di-Cast Machine Operator/Setter. . .	20	0.06	19
Punch-Press Operator, Metal.	430	1.61	7
Punch-Press Setter, Metal	110	0.40	4
Compression/Injection-Molding Machine Operator, Plastics.	650	2.45	8
Conveyor Operator/Tender	70	0.27	10
Dip Plater, Non-Electrolytic	30	0.12	8
Setter, Plast Molding Machine. . . .	70	0.26	13
Casket Cover/casket liner.	30	0.09	20
Gluer/Cementer, Hand	60	0.20	9
Screen/Stencil Printer/Setter. . . .	80	0.29	11
Screen Cutter/Maker, Non-Photographic	10	0.04	22
Screen Maker, Photographic Process .	30	0.09	19
Assembler.	3,060	11.48	11
Decorator, Hand	130	0.47	10
Bagger, Plastics	10	0.02	11
Caster, Plastics	50	0.18	10
Laminator, Performs	10	0.03	33
Vacuum Plastic Forming Machine Operator.	10	0.03	21
All Other Skilled Craft and Kindred Workers	670	2.53	N/A
All Other Semiskilled Craft and Kindred Workers	2,190	8.23	N/A
All Other Laborers	1,790	6.70	N/A
Clerical Occupations	4,090	15.32	N/A
Bookkeeping/Billing Machine Operator	60	0.24	6
Computer Operator	60	0.22	4
Keypunch Operator	80	0.31	4
Peripheral EDP Equipment Operator. .	50	0.16	10
Tabulating-Machine Operator.	10	0.05	21
All Other Office Machine Operator. .	20	0.06	N/A

SIC 39 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Stenographer	20	0.08	4
Accounting Clerk	240	0.89	4
Bookkeeper, Hand	140	0.51	8 8
File Clerk	130	0.49	4
General Clerk, Office	420	1.56	7
Order Clerk	260	0.96	5
Payroll/Timekeeping Clerk	210	0.79	10
Personnel Clerk	50	0.19	7
Procurement Clerk	60	0.22	8
Receptionist	40	0.15	11
Secretary	360	1.36	4
Statistical Clerk	60	0.22	6
Switchboard Operator	20	0.07	7
Switchboard Operator/Receptionist	60	0.21	6
Typist	200	0.73	4
Clerical Supervisor	150	0.55	4
All Other Office Clerical	130	0.48	N/A
Production Clerk/Coordinator	350	1.30	5
Shipping Packer	470	1.74	7
Shipping/Receiving Clerk	190	0.70	6
Stock Clerk/Stockroom	140	0.54	6
All Other Plant Clerical	110	0.42	N/A
Sales Occupations	730	2.74	N/A
Sales Representative	660	2.48	5
Sales Clerk	70	0.27	9
TOTAL	26,690	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

OCCUPATIONS OF EMPLOYEES
JEWELRY, SILVERWARE AND PLATED WARE (SIC 391)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	620	7.00	7
Professional Occupations	370	4.18	N/A
Industrial Engineer	50	0.60	13
Mechanical Engineer	20	0.19	15
All Other Engineers	10	0.15	N/A
All Other Natural and Mathematical Scientists	10	0.08	N/A
Systems Analyst, EDP	30	0.31	20
Purchasing Agent/Buyer	40	0.42	5
Accountants/Auditors	40	0.48	8
Nurse, Professional	10	0.11	11
Personnel & Labor Relations Specialists	30	0.31	11
Designer	100	1.15	9
All Other Professional Workers	30	0.34	N/A
Technical Occupations	120	1.35	N/A
Computer Programmer	50	0.52	11
Drafter	10	0.11	28
Tool Programmer, Numerical Control	10	0.12	N/A
All Other Engineering Technicians	30	0.25	N/A
All Other Technicians	20	0.26	N/A
Service Occupations	250	2.82	N/A
Janitors, Porters & Cleaners	160	1.81	16
Guards & Doorkeepers	70	0.73	13
Food Service Workers	10	0.06	32
Supervisor, Nonworking Service	10	0.12	32
Maintenance & Production Occupations	5,460	61.63	N/A
Mechanic, Maintenance	20	0.17	36
All Other Mechanics & Repairers	20	0.18	N/A
Truck Driver	10	0.12	25
Carpenter	20	0.21	17
Compositor/Typesetter	10	0.07	N/A
Electrician	20	0.27	13
Filers, Grinders, Buffers, Chippers Cleaners/Polishers	730	8.33	16
Supervisor, Nonworking	240	2.69	12
Industrial Truck Operator	10	0.14	28
Inspector	270	3.04	22
Jeweler/Silversmith	70	0.76	25

SIC 391 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Machinist	90	1.03	23
Maintenance, Repairer, General Utility	20	0.19	22
Helper Trades	10	0.13	28
Millwright	30	0.28	22
Order Filler	120	1.31	28
Painter, Maintenance	10	0.09	23
Electroplater	120	1.32	20
Plumber/Pipefitter	10	0.13	22
Press Operator/Plate Printer	30	0.37	6
Production Packager	360	4.12	29
Stationary Boiler Firer	20	0.18	21
Tool & Die Maker	120	1.31	11
Welders and Flamecutters	70	0.79	31
Bench Hand, Jewelry	470	5.28	26
Caster	40	0.40	12
Caster, Finished/Semi Finished Products	20	0.25	38
Etcher/Engraver	160	1.85	26
Finisher, Hand	30	0.30	32
Gem Cutter	10	0.11	N/A
Grinding Machine Operator, Metal	160	1.85	44
Jewel-Bearing Lathe Operator	10	0.13	N/A
Lathe Operator, Wood	10	0.11	44
Lathe Machine Operator, Metal	20	0.27	45
Machine Tool Operator, Combination	30	0.37	42
Metal Mold Maker	30	0.38	12
Milling/Planing Machine Operator	50	0.59	21
Plater Helper	150	1.72	23
Stone Setter	80	0.94	49
Tester	10	0.14	32
Wax Pattern Worker	30	0.29	23
Di-Cast Machine Operator/Setter	10	0.12	19
Punch-Press Operator, Metal	270	3.01	29
Punch-Press Setter, Metal	70	0.73	16
Compression/Injection-Molding Machine Operator, Plastics	10	0.11	10
Conveyor/Tender	10	0.11	34
Dip-Plater, Non-Electrolytic	30	0.35	27
Setter, Plastic Molding Machine	10	0.05	21
Gluer/Cementer, Hand	20	0.22	24
Caster, Plastics	20	0.26	24
All Other Skilled Craft and Kindred Workers	100	1.17	N/A
All Other Semiskilled Craft and Kindred Workers	760	8.59	N/A
All Other Laborers	410	4.71	N/A

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Clerical Occupations	1,640	18.51	N/A
Bookkeeping/Billing Machine Operator	30	0.36	28
Computer Operator	30	0.29	18
Keypunch Operator	40	0.46	13
Peripheral EDP Equipment Operator	40	0.39	16
Stenographer	20	0.17	18
Accounting Clerk	100	1.17	17
Bookkeeper, Hand	50	0.52	27
File Clerk	50	0.52	22
Order Clerk	120	1.34	22
Payroll/Timekeeping Clerk	30	0.31	20
Personnel Clerk	20	0.17	20
Procurement Clerk	20	0.19	20
Receptionist	10	0.07	49
Secretary	140	1.55	13
Statistical Clerk	40	0.40	15
Switchboard Operator	10	0.06	24
Switchbaord Operator/Receptionist	20	0.21	30
Typist	70	0.84	12
Clerical Supervisor	80	0.92	17
All Other Office Clerical	250	2.89	N/A
Production Clerk/Coordinator	190	2.15	9
Shipping Packer	80	0.88	16
Shipping/Receiving Clerk	60	0.67	20
Stock Clerk, Stockroom	60	0.72	14
All Other Plant Clerical	80	0.87	N/A
Sales Occupations	400	4.51	N/A
Sales Representative	380	4.36	25
TOTAL	8,860	100.00	N/A

N/A Relative Error Not Available

Note: May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
TOYS AND SPORTING GOODS (SIC 394)

Reference Date May 1980

OCCUPATION	EMPLOYMENT Number	Percent	Relative Error Percent
Managers and Officers.	300	3.61	40
Professional Occupations	230	2.80	N/A
Industrial Engineer.	30	0.33	28
Mechanical Engineer.	50	0.63	43
All Other Engineers.	10	0.16	N/A
Systems Analysts, EDP	10	0.16	40
Nurse, Professional.	20	0.19	28
Personnel & Labor Relations Specialists	20	0.22	30
Designer	10	0.16	47
All Other Professional Workers . .	80	1.01	N/A
Technical Occupations	150	1.81	N/A
Computer Programmer	20	0.25	43
Drafter	20	0.21	30
All Other Engineer Technicians . .	20	0.26	N/A
All Other Technicians...	90	1.12	N/A
Service Occupations.	130	1.56	N/A
Janitors, Porters & Cleaners . . .	80	0.97	34
All Other Service Workers.	50	0.64	N/A
Maintenance & Production Occupations	6,440	77.50	N/A
Mechanic, Automotive	10	0.06	40
All Other Mechanics & Repairers. .	10	0.16	N/A
Truck Driver	20	0.22	39
Carpenter.	10	0.08	33
Electrician.	20	0.28	12
Supervisor, Nonworking	360	4.33	17
Industrial Truck Operator	180	2.18	31
Inspector.	400	4.80	27.
Machinist.	50	0.64	17
Millwright	80	0.99	38
Order Filler	140	1.66	40
Tool & Die Maker	10	0.14	42
Tester	150	1.76	50
Compression/Injection-Molding Machine Operator, Plastics	440	5.30	27
Assembler	2,640	31.68	42

SIC 394 (cont.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
All Other Skilled Craft and Kindred Workers	230	2.76	N/A
All Other Semiskilled Craft and Kindred Workers	640	7.70	N/A
All Other Laborers	1,050	12.56	N/A
Clerical Occupations	990	11.91	N/A
Bookkeeping/Billing Machine Operator	10	0.15	41
Computer Operator	10	0.09	43
All Other Office Machine Operators	20	0.22	N/A
Accounting Clerk	50	0.60	41
File Clerk	40	0.44	33
General Clerk, Office	100	1.15	36
Payroll/Timekeeping Clerk	130	1.53	49
Personnel Clerk	30	0.31	43
Secretary	110	1.28	41
Typist	80	0.97	25
Clerical Supervisor	20	0.25	40
All Other Office Clerical	160	1.92	N/A
All Other Plant Clerical	250	2.99	N/A
Sales Occupations	70	0.84	N/A
Sales Representative	70	0.84	29
TOTALS	8,310	100.00	N/A

N/A Relative Error Not Available

Note; May not add to totals due to rounding

OCCUPATIONS OF EMPLOYEES
COSTUME JEWELRY AND NOTIONS (SIC 396)

Reference Date May 1980

OCCUPATION	EMPLOYMENT Number	Percent	Relative Error Percent
Managers and Officers	160	7.21	14
Professional Occupations	80	3.60	N/A
Industrial Engineer	10	0.22	N/A
Purchasing Agent &/or Buyer . . .	20	0.67	37
Accountants and Auditors	10	0.58	44
Personnel & Labor Relations Specialist	10	0.27	N/A
Designer	20	0.86	16
All Other Professional Workers . .	10	0.45	N/A
Technical Occupations	10	0.45	N/A
All Other Engineering Technicians	10	0.45	N/A
Service Occupations	30	1.35	N/A
Janitors, Porters, & Cleaners . .	20	0.90	3
All Other Service Workers	10	0.59	N/A
Maintenance and Production Occupations	1,480	66.67	N/A
Truck Driver	10	0.36	11
Electrician	10	0.22	19
Filers, Grinders, Etc.	50	2.39	3
Supervisor, Nonworking	70	3.25	11
Industrial Truck Operator	10	0.27	16
Inspector	50	2.44	12
Machinist	30	1.26	6
Maintenance Repairer, General Utility	20	0.99	13
Order Filler	20	0.90	18
Electroplater	10	0.54	22
Tool and Die Maker	20	0.99	N/A
Welders and Flamecutters	20	0.99	48
Bench Hand, Jewelry	380	17.11	5
Caster	10	0.22	N/A
Centrifugal-Casting-Machine Operator	10	0.58	60
Chain Maker, Hand	10	0.31	N/A
Machine Tool Operator, Toolroom .	20	0.95	28
Metal Mold Maker	10	0.54	N/A
Plater Helper	20	0.86	18
Rubber Mold Maker	10	0.27	N/A
Wax Pattern Worker	20	0.95	N/A
Painter Production	30	1.22	34
Punch Press Operator, Metal . . .	40	1.94	23

SIC 396 (Con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Punch Press Setter, Metal	20	0.81	25
Gluer/Cementer, Hand	10	0.49	21
Screen or Stencil Printer and/or Setter	10	0.36	49
Assembler	80	3.66	46
Decorator, Hand	30	1.53	21
All Other Skilled Workers	20	0.90	N/A
All Other Semiskilled Workers	200	9.01	N/A
All Other Laborers	230	10.36	N/A
Clerical Occupations	420	18.92	N/A
Bookkeeping/Billing Machine Operator	10	0.22	N/A
Computer Operator	10	0.22	N/A
Keypunch Operator	20	0.76	N/A
Accounting Clerk	20	0.81	9
Bookkeeper, Hand	10	0.27	45
File Clerk	20	0.81	15
General Clerk, Office	30	1.62	22
Order Clerk	20	0.76	17
Payroll/Timekeeping Clerk	20	0.76	5
Procurement Clerk	10	0.31	N/A
Secretary	40	1.67	23
Statistical Clerk	10	0.27	N/A
Switchboard Operator/Receptionist	10	0.31	13
Clerical Supervisor	10	0.58	22
All Other Office Clerical Workers	40	1.80	N/A
Production Clerk/Coordinator	50	2.58	15
Shipping Packer	50	2.58	6
Shipping/Receiving Clerk	20	1.08	17
Stock Clerk, Stockroom	20	0.99	25
Sales Occupations	40	1.80	N/A
Sales Representatives	40	1.80	23
TOTAL	2,220	100.00	-

OCCUPATIONS OF EMPLOYEES
MISCELLANEOUS MANUFACTURES (SIC 399)

Reference Date May 1980

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
Managers and Officers	510	8.73	11
Professional Occupations	180	3.08	N/A
Industrial Engineer	10	0.22	30
Mechanical Engineer	10	0.22	34
Purchasing Agent &/or Buyer . . .	40	0.73	14
Accountants and Auditors	40	0.59	17
Personnel & Labor Relations Specialist	10	0.17	29
Designer	50	0.90	28
All Other Professional Workers .	20	0.34	N/A
Technical Occupations	40	0.68	N/A
Drafter	20	0.29	35
All Other Engineering Technicians	10	0.17	N/A
All Other Technicians	10	0.17	N/A
Service Occupations	70	1.20	N/A
Janitors, Porters, & Cleaners . .	40	0.70	20
All Other Service Workers	30	0.48	N/A
Maintenance and Production Occupations	3,980	68.15	N/A
All Other Mechanics and Repairers	30	0.50	N/A
Truck Driver	40	0.75	27
Supervisor, Nonworking	110	1.91	18
Industrial Truck Operator	40	0.70	32
Machinist	50	0.83	30
Maintenance Repairer, General Utility	30	0.44	22
Order Filler	80	1.28	29
Production Packager	370	6.28	21
Painter Production	40	0.75	30
All Other Skilled Workers	610	10.45	N/A
All Other Semiskilled Workers . .	1,910	32.71	N/A
All Other Laborers	640	10.96	N/A
Clerical Occupations	850	14.55	N/A
Computer Operator	10	0.25	33
All Other Office Machine Operators	40	0.69	N/A
Accounting Clerk	60	1.09	22
Bookkeeper, Hand	40	0.77	20
File Clerk	30	0.44	22

SIC 399 (Con't.)

OCCUPATION	EMPLOYMENT		
	Number	Percent	Relative Error Percent
General Clerk, Office	100	1.69	23
Order Clerk	40	0.68	32
Payroll/Timekeeping Clerk . . .	30	0.46	18
Personnel Clerk	10	0.11	33
Procurement Clerk	10	0.13	32
Secretary	70	1.16	17
Switchboard Operator/Receptionist	20	0.37	22
Typist	30	0.53	24
Clerical Supervisor	30	0.56	34
All Other Office Clerical Workers	40	0.65	N/A
Production Clerk/Coordinator . .	40	0.63	21
Shipping Packer	170	2.89	25
Shipping/Receiving Clerk . . .	50	0.89	16
Stock Clerk, Stockroom	20	0.32	27
All Other Plant Clerical Workers	10	0.11	N/A
Sales Occupations	210	3.60	N/A
Sales Representatives	150	2.62	20
Sales Clerk	60	0.92	N/A
TOTAL	5,840	100.00	-

N/A Relative Error Not Available

Note: May not add to totals due to rounding.

METHODOLOGY

The Sample

The second quarter 1980 report (ES 202) of employment and wages covered by the Massachusetts Employment Security Law was used as a sampling frame for the Occupational Employment Statistics survey of non-manufacturing establishments.

The sampling frame was stratified by three-digit SIC's (Standard Industrial Classification) and by nine employment size classes. Establishments with less than four employees were excluded from the sample, and all units with employment of two hundred and fifty or more were automatically included. All other establishments were subject to sample selection on a random basis, with the units in larger size classes having a proportionally higher chance of selection. Each unit was given a weight according to the proportion of firms selected in each size class. The sample included 3855 establishments with benchmark employment of 571,475.

The Survey and Responses

Each establishment was mailed a survey schedule; telephone calls and personal visits were made where the date was critical for calculating valid estimates. As many as three follow-up schedules were mailed to nonrespondents. Of the 3855 establishments in the survey, replies were received from 2581, or 66.9 percent. After manual editing and mechanical (computer) screening, 2375 responses with total employment of 365,302 were determined usable, 63.9 percent of sample employment.

The Estimating Procedure

All usable responses were stratified into seven size groups, by industry. Reported total employment (or the summed occupational employment) from each usable response was multiplied by the weight assigned during sample selection. These industry data were then divided into the employment in the ES 202 report for the reference month of the survey (stratified by corresponding size class cells). The result produced by the procedure is known as the benchmark factor. This factor was then applied to the occupation data, thus accounting for nonresponse. These occupational estimates were then summed across size classes in industry totals.

Sampling Error

Sampling error is an arithmetic measure of the precision of the estimate. It is the difference between the estimate computed from the sample and the result that would have been obtained if the same methods were used to collect identical information from the universe. The relative errors listed in this report are the sampling errors of each occupation expressed as a percent of that occupational estimate. The relative errors shown are such that the chances are 2 out of 3 that the results of collecting identical information from the entire population would not differ by more than the percent of relative error shown; the chances are 19 out of 20, 95 percent, that the results of collecting identical information from the entire population would not differ by more than twice the percent shown. For example, it is estimated in this report that there are 3980 Production Packages in SIC 20, Food and Kindred Products, Accounting for 14.61 percent of total employment in the industry. Thus the chances are 68 out of 100 that the results of collecting identical information from the entire population would differ by less than 159 (4 percent) from the estimates 3980 estimated; similarly the estimated 14.61 percent of total employment would differ by less than 0.06 percent of total employment.

Nonsampling Error

The results of this survey are subject to nonsampling errors as well. Although careful editing and screening steps were taken, some errors in processing and computation may have occurred. These errors could be from faulty schedule design or an inability to collect data as defined. Responding establishments may account for some errors because of inaccuracy of data furnished such as placing workers in a wrong occupation. The nonrespondents are a source of nonsampling error for which measures are not available but are reflected in the estimating procedure.

THE MAJOR OCCUPATIONAL CATEGORIES USED IN THE OCCUPATIONAL EMPLOYMENT STATISTICS SURVEY

OES CODE	DESCRIPTION
10000	MANAGERS AND OFFICERS Includes persons concerned with policy making, planning, organizing, staffing, directing and/or who directly supervise the activities of the company or establishment workforce. Includes only managers and officers who are exempt from the minimum wage and overtime provisions of the Fair Labor Standards Act.
20000	PROFESSIONAL OCCUPATIONS Includes persons concerned with the theoretical or practical aspects of such fields as science, engineering, technical work, art, education, medicine, law and business relations. Most of these occupations require substantial educational preparation, usually at the university level.
30000	TECHNICAL OCCUPATIONS Includes all persons actually engaged in technical work utilizing theoretical knowledge of fundamental scientific, engineering, mathematical, computer programming, or draft design principles, comparable to those acquired through study at institutions with less extensive training than 4-year colleges.
40000	SERVICE WORKERS Includes those workers in occupations concerned with the performance of services for persons that require either direct contact or close association with the individual; occupations concerned with the protection of individuals or public or private property; occupations concerned with preparing and serving food and beverages; and occupations related to the cleaning of the interior and equipment of buildings, offices, stores, and similar places.
50000	PRODUCTION AND MAINTENANCE WORKERS Includes all skilled, semiskilled, and unskilled workers performing machine and manual tasks involving operating, maintenance, construction, repair, material handling, and powerplant operations.

The Major Occupational Categories (Continued)

OES CODE	DESCRIPTION
60000	CLERICAL OCCUPATIONS Includes office and plant clerical personnel. Office clerical work involves preparing, transcribing, transferring systematizing, and preserving communications and records; collating accounts and distributing information. Plant clerical work involves planning, coordinating, or expediting of production and the flow of work; or the clerical aspects of receiving, storing, issuing, or shipping of materials, merchandise, supplies, or equipment.
70000	SALES OCCUPATIONS Includes persons concerned wholly or primarily with selling when knowledge of the goods or services sold is required, such as sales agents, sales clerks, real estate agents, demonstrators, etc.

Manufacturing Employment
Annual Averages 1977-1980

SIC		1977[1]	1978	1979	1980	Percent Change 77-80
	TOTAL	621.0	652.1	672.1	673.1	+ 8.4
	Durables	352.3	378.9	401.1	409.7	+ 16.3
	Nondurables	268.7	273.2	271.0	263.4	- 2.0
20	Food	29.1	28.5	28.2	27.3	- 6.2
22	Textiles	27.9	28.2	27.1	25.4	- 8.9
23	Apparel	42.8	42.1	40.7	39.8	- 7.0
24-25	Lumber & Furniture	13.6	14.0	13.9	13.3	+ 2.2
26	Paper	29.4	30.4	29.8	28.9	- 1.7
27	Printing	42.2	42.9	44.0	43.7	+ 3.5
28	Chemicals	17.3	17.7	18.2	18.3	+ 5.7
30	Rubber	30.3	32.1	32.5	31.0	+ 2.3
31	Leather	22.8	23.5	22.2	20.8	- 8.9
32	Stone, Clay, Glass	12.3	13.1	13.7	13.1	+ 6.5
33	Primary Metals	16.9	17.1	17.6	17.3	+ 2.3
34	Fabricated Metals	51.8	53.2	55.1	54.1	+ 4.4
35	Nonelectrical Machinery	82.0	90.4	101.6	109.5	+ 33.5
36	Electrical Machinery	91.0	98.3	104.6	109.4	+ 20.2
37	Transportation	33.2	36.4	37.1	35.4	+ 6.6
38	Instruments	51.5	56.5	57.5	57.6	+ 11.8
39	Miscellaneous Mfg.	*	*	27.0	27.0	-
21-29	Other Nondurables	*	*	1.3	1.2	-

Source: Current Employment Statistics Program (BLS 790)

March 1980 Benchmark for 1980, 1979 and 1978 employment, March 1978 Benchmark for 1977 employment

[1] Year of previous manufacturing survey

* Unpublished series

PERCENTAGE DISTRIBUTION
OF MANUFACTURING EMPLOYMENT

ANNUAL AVERAGES 1977-1980

SIC		1977[1/]	1978	1979	1980
	TOTAL	621.0	652.1	672.1	673.1
	Durables	56.7	58.1	59.7	60.9
	Nondurables	43.3	41.9	40.3	39.1
20	Food	4.7	4.4	4.2	4.1
22	Textiles	4.5	4.3	4.0	3.8
23	Apparel	6.9	6.5	6.1	5.9
24-25	Lumber & Furniture	2.2	2.1	2.1	2.0
26	Paper	4.7	4.7	4.4	4.3
27	Printing	6.8	6.6	6.5	6.5
28	Chemicals	2.8	2.7	2.7	2.7
30	Rubber	4.9	4.9	4.8	4.6
31	Leather	3.7	3.6	3.3	3.1
32	Stone, Clay, Glass	2.0	2.0	2.0	1.9
33	Primary Metals	2.7	2.6	2.6	2.6
34	Fabricated Metals	8.3	8.2	8.2	8.0
35	Nonelectrical Machinery	13.2	13.9	15.1	16.3
36	Electrical Machinery	14.6	15.1	15.5	16.3
37	Transportation	5.3	5.6	5.5	5.3
38	Instruments	8.3	8.7	8.6	8.6
39	Miscellaneous Mfg.	*	*	4.0	4.0
21-29	Other Nondurables	*	*	.2	.2

Source: Current Employment Statistics Program (BLS 790)

March 1980 Benchmark for 1980, 1979 and 1978 employment, March 1978 Benchmark for 1977 employment

[1/] Year of previous manufacturing survey

* Unpublished series

Occupational Profiles published by the Massachusetts Division of Employment Security.

1971	Manufacturing [1]
1973	Non-Manufacturing [1]
1973	Wholesale and Retail Trade [1]
1974	Manufacturing [1]
1975	Selected Federal-State and Local Government [1]
1976	Wholesale and Retail Trade [1]
1977	Selected Manufacturing Industries
1977	Federal Government
1978	Non-Manufacturing
1979	State and Local Government
1979	Education
1979	Wholesale and Retail Trade

[1] Out of Print

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